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(41)

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W A R N I N G

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WHICH IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW.**

C-O-N-F-I-D-E-N-T-I-A-L

SCIENTIFIC INFORMATION REPORT

Chinese Science (41)

This serial report contains unevaluated information prepared as abstracts, extracts, summaries, and translations from recent publications of the Sino-Soviet Bloc.

Abstracts represent all articles except brief notes and news items from all available issues of the Acta Sinica series, consisting of 38 separate publications. A complete list of these is included (see Table of Contents). English, Russian, or Chinese abstracts are either given in their entirety or condensed and are so identified. Whenever no abstract accompanies the Chinese text, one is prepared for this report. Brief notes and news items are prepared in the form of summaries and extracts and are presented separately in this report.

Individual items are unclassified unless otherwise indicated.

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C-O-N-F-I-D-E-N-T-I-A-L

ABSTRACTS FROM ACTAS SINICA

Biological Sciences

CHANG Shu-cheng (1728/2885/2398)

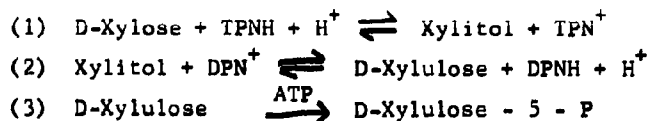
LI Kao-hsiang (7812/5221/5046)

WANG Huei-lien (3769/1920/5571)

"Pentose Metabolism in *Geotrichum Candidum* Link: 1. The Initial Steps of Xylose Metabolism"

Peiping, Sheng-wu Hua-hsueh Yu Sheng-wu Wu-li Hsueh-pao (*Acta Biochimica et Biophysica Sinica*), Vol 2, No 4, Dec 62, pp 237-246

Text of English Abstract: 1. The enzymic reactions involved in xylose metabolism were studied with cell-free extracts of xylose-grown *Geotrichum candidum* 2.361. The initial steps of xylose metabolism were found as follows:



(continuation of Sheng-wu Hua-hsueh Yu Sheng-wu Wu-li Hsueh-pao, Vol 2, No 4, pp 237-246)

2. The enzyme catalyzing reaction (1) was D-Xylose reductase, and it required TPN as coenzyme. The product of xylose reduction was identified as xylitol by paperchromatographic analysis.

3. The enzyme catalyzing reaction (2) was xylitol dehydrogenase, and it required DPN as coenzyme.

4. Reaction (3) was catalyzed by D-Xylulose kinase. All other pentoses tested could not be phosphorylated under the same conditions.

5. Xylose isomerase activity had not been detected in cell-free extracts of *Geotrichum candidum*, and thus the possibility of this pathway was eliminated.

6. All of the above 3 enzymes were found to be adaptive in nature. This is in accordance with the "successive adaptation" theory of Stanier.

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(continuation of Sheng-wu Hua-hsueh Yu Sheng-wu Wu-li Hsueh-pao,
Vol 2, No 4, pp 237-246)

The authors express thanks to TSOU Ch'eng-lu (6760/2110/7627) for his valuable opinions; alcohol dehydrogenase was prepared by FANG I-ch'eng (2455/0001/3397); Raney nickel was prepared by LIN Ying-jui (2651/2019/6904).

This paper was received for publication on 16 April 1962.

Authors' Affiliation: All of Institute of Microbiology, Chinese Academy of Sciences, Peiping.

HUANG Tso-yueh (7806/1563/6885)
LO Chia-li (7482/0857/3810)
T'AO I-hsun (7118/5030/6064)

"Studies on Phenolase of Schistosoma Japonicum"

Peiping, Sheng-wu Hua-hsueh Yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 4, Dec 62, pp 248-251

Text of English Abstract: The phenolase of *Schistosoma japonicum* has been studied with a manometric method. The homogenate of the female worm could oxidize different phenolic compounds. When L-tyrosine, 3,4-dihydroxyphenylalanine, p-cresol, and o-catechol were used as substrates, the enzymic activity (Q_{O_2} = $\mu\text{l/mg N/hr}$) of the paired worm at pH 6.8 was 5.5, 10.4, 11.3, and 3.2, respectively. Owing to the formation of pigment, the color of the medium turned gray or brown. The male worm did not exhibit this enzymic activity. When tyrosine was used as substrate, at a concentration of 4mM, the oxygen uptake approached maximum, the optimal pH being in the range of 8.0-8.8. In vitro, tartar emetic at a final concentration of 10^{-4} M caused 60% inhibition of the enzymic activity. This inhibitory effect could be also demonstrated in vivo. The phenolase activity of the worms obtained from infected guinea pigs which had been treated intraperitoneously with tartar emetic

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(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao,
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(20mg/kg) one hour before sacrifice was 40-70% lower than that of the untreated control. The phenolase was also present in *Fasciola hepatica*, but it differed from that of *Schistosoma japonicum* in substrate specificity, since it oxidized o-catecol much faster than tyrosine.

HANG Sheng-chia (2635/4164/0857) participated in the technical work.

This paper was received for publication on 25 April 1962

Authors' Affiliation: All of Institute of Parasitology, Chinese Academy of Medical Sciences, Shanghai.

SHEN Shan-chiung (3088/0810/3518)
CHEN Chun-piao (7115 0193/2871)
HSU Mei-lin (1776/5019/3829)
WANG Hao (3769/3185)

"Evidence Regarding the Origin of Guanido-Group of Streptidine During Streptomycin Synthesis"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 4, Dec 62, pp 253-259

Text of English Abstract: The yield of streptomycin can be increased 40-80% by adding ornithine, citrulline, or arginine to the fermentation media. The effectiveness of these amino-acids is in the order: arginine citrulline ornithine.

$C^{14}O_2$ given to the medium during fermentation is shown to be incorporated exclusively in the guanido-group of the streptidine moiety of the antibiotic. Ornithine increases the extent of $C^{14}O_2$ incorporation, while arginine inhibits it.

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(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao, Vol 2, No 4, pp 253-259)

Radioactive arginine has been demonstrated in the mycelial cell suspensions incubated with $C^{14}O_2$ and ornithine. When the labeled arginine thus formed is subjected to the action of arginase, the ornithine produced is not radioactive, indicating that only the guanido-group of arginine is C^{14} -labeled.

Enzymes of the ornithine cycle are investigated. Ornithine transcarbamylase and transamidinase have been demonstrated in the cell free extracts of the mycelium, but the activity of "arginine synthetase" is not detectable.

The role of the ornithine cycle as the main source of the guanido-group for streptomycine synthesis in *Streptomyces griseus* is suggested.

HUANG Yu (7806/6877) conducted experiments with streptomycin.

This paper was received for publication on 26 April 1962.

Authors' Affiliation: All of Laboratory of Microbiology, Institute of Plant Physiology, Chinese Academy of Sciences, Shanghai.

CH'I Cheng-wu (2058/2973/2976)
NIEH Hsiang-t'ing (5119/0686/1656)

"Studies on the Reaction Mechanism of Hog Kidney Acylase: 1. The Relation of Metal Ion and Enzyme Activity"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 4, Dec 62, pp 260-268

Text of English Abstract: (1) With the exception of EDTA and Na-azide, most of the chelating agents were able to inhibit the activity of acylase. Under conditions of reversible inhibition, the activity could be partially or completely restored by the addition of various metal ions. If the concentration of the inhibitor was kept at a chosen value, the extent of reactivation was found to depend on the concentration of the metal ions added. For each of these ions there was a definite and optimum concentration. It is suggested that the metal ion needed for acylase activity may be Co^{++} or Mn^{++} .

(2) Under mild conditions and in the presence of a substrate, the inhibition of the acylase activity by either o-phenanthroline or thioglycolic acid appeared to be a competitive one. The values of the dissociation constants K_i were $1.28 \times 10^{-4}M$ and $1.74 \times 10^{-3}M$,

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(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao, Vol 2, No 4, pp 260-268)

respectively. Moreover, one molecule of enzyme combined with two molecules of inhibitor. It is probable that the acylase molecule exists in the form of a dimer. With increasing concentration of the inhibitor or the temperature of the reaction, the inhibition changed into an irreversible one. Similar results were obtained when the enzyme was incubated in the presence of the inhibitor.

(3) The techniques of electrodialysis and dialysis against buffers of different pH values were employed to remove metal ion from acylase. All these treatments resulted in an inactivation of the enzyme. It seems likely that besides taking part in the combination with substrate, the metal ion in acylase plays an important role in maintaining the spatial configuration of the molecule.

This paper was received for publication on 13 May 1962.

Authors' Affiliation: Both of Institute of Biochemistry, Chinese Academy of Sciences, Shanghai; MIEH, taking refresher courses at Shansi Agricultural College.

NIEH Hsiang-t'ing (5119/0686/1656)
CH'I Cheng-wu (2058/2973/2976)

"Studies on the Reaction Mechanism of Hog Kidney Acylase: 2. The Relation of Sulfhydryl and Imidazol Groups to the Enzyme Activity"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 4, Dec 62, pp 270-275

Text of English Abstract: (1) Acylase could be inhibited by various types of thiol reagents, the most sensitive one yet found being PCMB. In all the cases of inhibition, however, there was always some residual enzyme activity left. The inhibition of PCMB could be removed completely on the addition of thioglycolic acid. The extent of reactivation was found to depend on the concentration of the thioglycolic acid added. When the amount of the latter exceeded 150 times molar concentration of PCMB, the enzyme activity at first rose unexpectedly to a level some 20% higher than that of the original and then fell again when the concentration was further increased.

(2) An inactivation of acylase occurred rapidly on photooxidation, but the enzyme was not affected by the tryptophan specific reagent N-bromosuccinimide. The enzyme activity could also be inhibited by

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bromoacetic acid at rather high concentrations and maximally at
about pH 5.

(3) The effect of pH on the maximal velocity V of acylase was measured. pH had no effect on the Michaelis constant K_x . From the effect of pH on V , the pK values of the active groups involved were found to be 5.9 and 8.6, corresponding to the dissociation constants of the histidine and cysteine groups in the enzyme protein.

(4) From the experimental results, it was suggested that histidine and cysteine residues are intimately concerned with the enzyme activity of acylase. These two groups and the metal ion in the enzyme protein may form a chelated active center. During enzyme catalysis, the substrate may first be bound to the enzyme through the metal ion and then suffers hydrolysis.

This paper was received for publication on 18 June 1962.

Authors' Affiliation: Both of Institute of Biochemistry, Chinese Academy of Sciences, Shanghai; NIEH, taking refresher courses at Shansi Agricultural College.

WU Ch'in-jung (0124/2953/2837)
LIN Ch'i-shui (2651/0366/6142)
WANG Chin-chang (3769/6855/4545)

"Studies on Oxidative Phosphorylation: 1. The Effect of 2, 4-Dinitrophenol on the Oxidation of Succinate in Rat-Liver Mitochondria"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao, (Acta Biochimica et Biophysica Sinica), Vol 2, No 4, Dec 62, pp 276-284

Text of English Abstract: The effect of 2,4-dinitrophenol on the oxidation of succinate in rat-liver mitochondria has been studied with the vibrating platinum microelectrode. It has been found that DNP stimulated the rate of respiration only for a short period of about one minute, and this was followed by an inhibited phase of the oxygen-uptake. The inhibited phase no longer appeared if inorganic phosphate was added before, together with, or shortly after the addition of DNP when the respiration was still in the stimulated phase, whereas after the inhibited phase had set in, the addition of inorganic phosphate had no stimulatory effect on the rate of respiration. Arsenate could not replace inorganic phosphate in prolonging the stimulating effect of DNP on succinate oxidation. Neither ADP nor ATP could directly restore the respiratory activity of the above system in the inhibited phase. ADP added after DNP

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and inorganic phosphate was even somewhat inhibitory. Slow increase in respiration of the DNP inhibited system was observed after short incubation with ATP. These facts suggest that the factor which is essential for maintaining a high rate of oxidation in the DNP-treated system is not ATP or inorganic phosphate as such, but is produced from inorganic phosphate during respiration. It has been suggested as a working hypothesis that it is a high energy phosphate intermediate of oxidative phosphorylation, which is essential for maintaining a high rate of oxidation of succinate through the phosphorylating respiratory chain.

The possibility that the accumulation of oxaloacetate is the direct cause of the inhibition of succinate oxidation by DNP has been discussed. Results presented in the present paper do not offer support for this hypothesis.

The authors express thanks to TSOU Ch'eng-lu (6760/2110/7627) for taking an active interest in the research results and to CHANG Yü-tuan (1728/0645/4551) for his valuable opinions.

This paper was received for publication on 25 May 1962.

(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao,
Vol 2, No 4, pp 276-284)

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HUANG Tso-yueh (7806/1563/6885)
CHU Chin-hung (2612/6930/3163)

"Studies on Succinoxidase of Schistosoma Japonicum"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 4, Dec 62, pp 286-294

Text of English Abstract: Activities of succinoxidase, succinic dehydrogenase, succinic-cytochrome c reductase, and cytochrome oxidase in homogenates of *Schistosoma japonicum* were demonstrated manometrically and spectrophotometrically.

It was observed that the succinoxidase activity was directly proportional to the concentration of cytochrome c from $0.4 \times 10^{-5}M$ to $2 \times 10^{-5}M$. The enzymic activity was also closely related to the phosphate concentration, the lower the concentration, the higher the activity. The activity of succinoxidase in the homogenate of *S. japonicum* was determined under its optimal conditions (succinate, 0.02M; cytochrome c, $2 \times 10^{-5}M$; phosphate buffer, 0.01M, pH 7.4). The values of paired worms were shown as follows: oxygen uptake, $Q_{O_2} = 30.3 \mu l/hr./mgN$; succinate consumption, $Q_s = 322 \mu g/hr./mg.N$; fumarate production, $Q_f = 157 \mu g./hr.mg.N$. On

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the basis of mg of nitrogen, the activity of the female worms was found to be higher than that of the male worms.

Malonate, diethyldithiocarbamate, and cyanide inhibited markedly the activity of succinoxidase, whereas tartar emetic, Sb-58, and Fouadin in the concentration of $2 \times 10^{-3}M$ did not allow any significant inhibitory effect. Furthermore, cyanide inhibited not only cytochrome oxidase, but also succinic dehydrogenase of *S. japonicum* as determined by the methylene blue method.

It was found that Menadione (vitamine K₃) was able to stimulate the oxygen uptake temporarily, when succinate was used as the substrate.

Preliminary results indicated that the homogenate of *S. japonicum* heated in a boiling water bath for 30 minutes could liberate a thermostable "reducing substance," which was capable of reducing cytochrome c anaerobically in the absence of succinate.

The metabolism of succinate and the role of cytochrome system in *S. japonicum* were discussed.

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(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao,
Vol 2, No 4, pp 286-294)

This paper was received for publication on 29 May 1962.

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KO Lin-chun (5514/7792/0193)
CH'I Kuo-jung (4359/0948/2837)
CH'EN Ch'ang-ch'ing (7115/1603/1987)
KUNG Yueh-t'ing (7895/1547/0080)

"Synthesis of the Peptide Fragments of the B-Chain of Insulin:
4. Synthesis of Carbobenzoxyalanylleucyltyrosylleucylvalyl (S-benzyl)
cysteinyglycine Ethyl Ester"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica
et Biophysica Sinica), Vol 2, No 4, Dec 62, pp 295-303

Text of English Abstract: Carbobenzoxyalanylleucyltyrosylleucylvalyl
(S-benzyl) cysteinyglycine ethyl ester, a derivative of the heptapeptide
fragment (B₁₄₋₂₀) of the B-chain of insulin, has been prepared by coupling
leucylvalyl (S-benzyl) cysteinyglycine ethyl ester with carbobenzoxyalanyl-
leucyltyrosine and carbobenzoxyalanylleucyltyrosine axide by the carbodi-
imide and the axide methods, respectively. The tripeptide derivative has
been prepared by condensing carbobenzoxyalanine with leucyltyrosine ethyl
ester with dicyclohexylcarbodiimide, while the tetrapeptide derivative
has been obtained by coupling either carbobenzoxyvaline with
(S-benzyl) - cysteinyglycine ethyl ester by the carbodiimide method or

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carbobenzoxy-leucine p-nitrophenyl ester with valyl-(S-benzyl) cysteinylglycine ethyl ester. Saponification of these derivatives gave rise to the corresponding carboxypeptides from which the free tripeptide, S-benzylated tetrapeptide, and S-benzylated heptapeptide were obtained by HBr/HAc treatment. The results from the enzymatic digestion by carboxypeptidase and leucine aminopeptidase of the free tripeptide and S-benzylated tetrapeptide showed that no racemized amino acids were present in these intermediates, and the finding that free tripeptide and S-benzylated tetrapeptide were liberated from the chymotryptic digestion of the S-benzylated heptapeptide further proved the specificity of the enzyme, as well as the optical purity of the heptapeptide.

The authors express thanks to P'AN Lu-hsing (3382/4389/5281), FANG Tzu-chung (2455/1316/1813), CHANG Yung-line (1728/3057/5571), TS'UI Kuei-fang (1508/2710 5364), CH'EN Chih-min (7115/1807/3046), and CH'EN Yuan-ts'ung (7115/6678/5115) for preparing part of the work; to LIN Nan-ch'in (2651/0589/3830) and SUN Ts'e (1327/0374) for making original analyses; to WU Ts'ui-jung (0702/5050/1369), LU Jui-jen (4151/3843/0088), and KU Ta-mei (7357/1129/1188) for their work with electrophoreses, tomograms, amino acid quantity measurements, and

(continuation of Sheng-wu Hua-hsueh-yu Sheng-wu Wu-li Hsueh-pao,
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racemizations; and to FENG Jen-t'ao (7685/0088/3447) for handling solvents. Amino acids were supplied by the Tung-feng (2639/7364) plant of the Institute of Biochemistry.

Authors Affiliation: All of Institute of Biochemistry, Chinese Academy of Sciences, Shanghai.

C-O-N-F-I-D-E-N-T-I-A-L

LU Tzu-hsien (7627/1311/6343)
TS'AO T'ien-ch'in (2580/1131/2953)

"Linear Polymerization of the S-Sulphonate of the B-Chain of Insulin;
1. Phenomena"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 4, Dec 62, pp 305-318

Text of English Abstract: It was discovered that the S-sulphonate of the B-chain of insulin could undergo linear polymerization in solutions at pH 6-9 and at room temperature to form a viscous solution which eventually set into a gel. The whole process could be divided into three distinct yet interrelated states -- the induction, the polymerization, and the gelation. The first inductive stage may be a stage of nuclear formation. Here the viscosity changed very slowly with time. The characteristics of the next polymerization stage were, firstly, a rapid increase in non-Newtonian viscosity and, secondly, the appearance of flow birefringence. On further incubation, the system became thixotropic and subsequently changed into a transparent, firm gel. The appearance of thixotropy may be regarded as the onset of gelation.

(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao, Vol 2, No 4, pp 305-318)

The addition of a trace of the polymerized B-chain to a solution of the monomeric B-chain enhanced considerably the rate of increase in viscosity and, thereby, very much shortened the inductive stage of the polymerization process. Therefore, the polymerization of the B-chain is, just like the formation of fibrous insulin, an autocatalytic process.

At pH 9.0 and at an ionic strength 0.010, the B-chain failed to polymerize, but if the ionic strength was raised to 0.110, an increase in viscosity was observed. The plot of η vs t was, however, not a S-shaped curve, but was one that was apparently limited to the inductive segment only. It is likely that we are here dealing with a system of intermediate polymers.

The polymers of the B-chain formed long, flexible chains. The length of the polymers was about $3-4\mu$ as deduced from measurements of flow birefringence. Long, thin fibrils of diameter $\sim 50\text{\AA}$ could be seen under the electronmicroscope.

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(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao,
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At pH > 10 , the fibrous B-chain could be partially depolymerized. The products thus obtained still showed the properties of non-Newtonian flow and flow birefringence. In 8 M urea solution, the depolymerization of the fibrous B-chain approached completion.

The authors express thanks to LIN Nan-ch'in (2651/0589/3830), JEN Mei-hsuan (0117/2734/6513), and CHANG Yu-shang (1728/0645/1424) for determining nitrogen fixations, making terminal studies in DNP, and working with fluidized birefractions.

This paper was received for publication on 19 June 1962.

Authors' Affiliation: Both of Institute of Biochemistry, Chinese Academy of Sciences, Shanghai.

P'ENG Chia-mu (1756/0502/2606)
CHANG Yu-shang (1728/0645/1424)
LU Tzu-hsien (7627/1311/6343)
TS'AO T'ien-ch'in (2580/1131/2953)

"Linear Polymerization of the S-Sulphonate of the B-Chain of Insulin:
2. Electron-Optical Observations"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 4, Dec 62, pp 319-324

Text of English Abstract: The presence of long fibrils in a gel of the polymerized B-chain of insulin as deduced from viscometric and flow birefringence studies reported in paper I of this series was confirmed with electron microscopy. Shadowing and negative staining techniques revealed rather uniform fibrils of average diameter 50-60 Å and of indefinite length. These are decidedly thinner than those of fibrous insulin (~ 70 Å) observed under identical conditions.

The different stages of polymerization were followed under the electron microscope. In the induction period, short fibrils of about 50-60 X 200 Å took shape and accumulated with time. It is likely that these asymmetric aggregates may be related to the nuclei presumed in paper I. Under

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favorable conditions, the asymmetric units might be able to align themselves preparatory to the formation of fibrils. In the next polymerization stage, long fibrils began to emerge which gradually, assumed preponderance at the expense of the short fibrils, to pass into the thixotropic gel state when a certain amount of the unpolymerized material still persisted. It was not until the later phases of gel-formation that the unpolymerized material completely disappeared.

Some side-by-side aggregation of the fibrils was also observed. The depolymerization effect with alkali and urea gave, in addition to random aggregates of the monomer, some polydispersed short fibrils, including the 50-60 X 200 A asymmetric units.

The authors express thanks to YEH Jung (5509/1369) of the Institute of Physiology, Chinese Academy of Sciences, for working with stages of fermentation.

This paper was received for publication on 12 July 1962.

Authors' Affiliation: All of Institute of Biochemistry, Chinese Academy of Sciences, Shanghai.

SHEN Kung-mou (3088/7255/2804)

"Studies on Photophosphorylation: 5. Effects of Dicumarol on Light Induced Electron Transport and Photophosphorylation by Isolated Chloroplasts"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 4, Dec 62, pp 326-331

Text of English Abstract: The potent anticoagulant dicumarol has recently been used in the biochemical investigations to elucidate the possible role of vitamin K in the respiratory electron transport chain and in oxidative phosphorylation. In the present paper, the effects of dicumarol on light induced electron transport and photophosphorylation by isolated wheat seedling chloroplasts are reported.

(1) Under strong illumination, dicumarol not only uncouples the photophosphorylation mediated by vitamin K₃, but also uncouples those mediated by other cofactors (FMN, PMS) to approximately the same extent. In the vitamin K₃ system, no competitive relationship between dicumarol and vitamin K₃ has been observed. This fact indicates that the role of exogenous vitamin K₃ in photophosphorylation, as in the case of other cofactors, is due to its effectiveness as an electron carrier and is

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not related to the phosphorylating mechanism proper.

(2) The effect of dicumarol on light-induced electron transport varies with the light intensity and with the cofactors or Hill oxidants added. The inhibition of $K_3Fe(CN)_6$ reduction is much more pronounced under weak illumination. The $K_3Fe(CN)_6$ and $K_3Fe(CN)_6$ plus 2,6-dichlorophenol indophenol systems are more sensitive to dicumarol than the vitamin K_3 and FMN systems. This phenomenon suggests that the inhibition of light-induced electron transport by dicumarol is due to the blocking of certain intermediate steps located before the usual limiting dark reaction at saturating intensities rather than acting directly on the light reaction which is probably common to all systems. The unequal sensitivity of vitamin K_3 or FMN and $K_3Fe(CN)_6$ systems to dicumarol further suggests that at least part of the electron transport pathway is different in these systems.

The authors express thanks to YIN Hung-chang (3009/1347/4545), SHEN Yun-kang (3088/0336/6921), and WANG T'ien-to (3769/1131/6995) for guidance in experimenting and writing the draft and to WANG Hsiu-fang (3076/4423/5364) for his analyses.

(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao,
Vol 2, No 4, pp 326-331)

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Author's Affiliation: Institute of Plant Physiology, Chinese Academy of Sciences, Shanghai.

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HU Ping-sheng (5170/3521/8508)
LIU Ch'eng-pin (0491/2110/2430)
LIANG Chih-ch'uan (2733/2784/2938)

"Studies on the Reactions of 1-Fluoro-2, 4-dinitrobenzene With the Degradation Products of Nucleic Acids and the Properties of the Reaction Products"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 3, Sep 62, pp 141-151

Text of English Abstract: The reaction conditions of FDNB with some of the degradation products of nucleic acid were investigated, and DNP-uracil, DNP-thymine, and DNP-uridine were prepared. The ultra-violet and infrared spectra of the DNP-compounds were compared with those of the original compounds; and based upon these spectral data, the point of attachment of DNP-group in these compounds were discussed.

The chromatographic behavior of the DNP-compounds with five different solvent systems was studied.

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The stability of the DNP-compounds toward acid and alkali was tested. It was found that these compounds were more stable in acid than in basic medium, and no degradation of these compounds was observed by treatment with 12 N HClO₄ or one N HCl at 100° C for 1-2 hours.

DNP-uridine produces in weak alkaline solution a stable orange red color, which follows Beer's law up to a concentration of 20 μ g per milliliter.

A spectrophotometric method has been suggested for the determination of DNP-group in the DNP-compounds.

The authors express thanks to CHOU Ch'ang-ling (0719/2490/3781) and WANG Hsiu-? (3769/4423/?) of the analysis laboratory, Institute of Materia Medica, Chinese Academy of Medical Sciences, for making original analyses and to Prof LIANG Ch'i-t'ien (2733/7494/1131), Department of Materia Medica, Institute of Materia Medica, Chinese Academy of Medical Sciences, for assisting with the analyses results.

This paper was received for publication on 18 December 1961. It was read at the annual meeting of the Peking Physiology Society on 14 Nov 61.

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(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao,
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Authors' Affiliation: All of Department of Biochemistry, Institute
of Experimental Medicine, Chinese Academy of Medical Sciences, Peiping.

CH'EN Ch'ang-ch'ing (7115/1603/1987)
HUANG Wei-te (7806/1919/1795)
CHANG K'uei-pang (1728/7608/2831)

"Synthesis of the Peptide Fragments of the B-Chain of Insulin:
III. Synthesis of N-Carbobenzoxyphe~~n~~ylalanylalanylglutaminylaspar-
aginy~~l~~ (Im-benzyl) Histidine Benzyl Ester"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica
et Biophysica Sinica), Vol 2, No 3, Sep 62, pp 152-161

Text of English Abstract: N-Carbobenzoxyphe~~n~~ylalanylalanylglutaminyl-
lasparaginy~~l~~ (Im-benzyl) histidine benzyl ester, a derivative of the
N-terminal pentapeptide of the B-chain of insulin, has been prepared
by stepwise condensation starting from Im-benzyl histidine benzyl ester
with the p-nitrophenyl esters of carbobenzoxyphe~~n~~ylalanylalanylglutamine, carbobenzoxyphe~~n~~-
paragine, and carbobenzoxyphe~~n~~ylalanylalanylvaline. Besides, this pentapeptide
derivative has also been synthesized by coupling asparaginy~~l~~glutaminyl
(Im-benzyl) histidine benzyl ester with carbobenzoxyphe~~n~~ylalanylalanylvaline
through the carbodiimide method. Partial racemization was observed
when p-nitrophenyl ester of N-carbobenzoxyphe~~n~~ylalanylalanylvaline was
synthesized directly from the carbobenzoxyphe~~n~~ylalanylalanylvaline, whereas an

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optically pure product could be obtained by condensing N-carbobenzo-
xyphenylalaline with free p-nitrophenyl valinate by means of the
carbodiimide method.

The Im-bensylated pentapeptide, which was obtained from the protected
pentapeptide ester by catalytic hydrogenolysis under appropriate
conditions or the prolonged treatment of hydrogen bromide in glacial
acetic acid, could be completely digested by leucine aminopeptidase.

The authors express thanks to NIU Ching-i (6873/4842/5030), TS'AO
T'ien-ch'in (2580/1131/2953), SHEN Chao-wen (3088/2507/2429), TSOU
Ch'eng-lu (6760/2110/7627), and WANG Te-pao (3769/1795/1405) for their
valuable opinions; to WU Ch'in-jung (0124/2953/2837), LIU Hsin-yuan
(0491/2450/0997), CHANG Tao-sa (1728/6670/2320), and NIEH Hsiang-
t'ing (5119/0686/1656) for preparing part of the work; and to FENG
Jen-t'ao (7685/0088/3447) for handling solvents. Amino acids were
supplied by the Tung-feng (2639/7364) Plant of the Institute of
Biochemistry. Original analyses were made by SUN Ts'e (1327/0374) and
LIN Nan-ch'in (2651/0589/3830). Aminopeptidase fixations and
tomograms were made by Wu Ts'ui-jung (0702/5050/1369) and LU Jui-jen
(4151/3843/0088).

(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao,
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C-O-N-F-I-D-E-N-T-I-A-L

LI Shih-o (2621/1102/6166)
CHAO Te-chen (6392/1795/5271)
CHANG Hui-ying (1728/1979/1758)
YU Shu-yu (0060/2885/3768)

"Changes in Some Enzymatic Activities and -SH Group Content in the Epidermis of Mice Undergoing Carcinogenesis by Methylcholanthrene"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 3, Sep 62, pp 163-171

Text of English Abstract: 1. Changes in some enzymatic activities and content of -SH group of the skin of mice during carcinogenesis induced by methylcholanthrene were investigated.

2. It was found that the lactic dehydrogenase from both normal epidermis and the tumor tissue had the same pH optimum of 10 for the reduction of DPN by lactate and Michaelis constants of 2×10^{-2} M for lactic acid and 2×10^{-4} M for DPN. The normal and epidermal ATPase had an pH optimum of 7.4 and a Michaelis constant of 2.2×10^{-3} M. The pH optimum of normal epidermal cathepsin was 3.5.

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3. In the course of carcinogenesis, it was observed that (1) the protein content of the tissue extract slightly increased; (2) the activities of glutamic dehydrogenase (GDH), glutamic-oxaloacetic acid transaminase, and glutaminase (phosphate-activated) decreased; (3) the activity of lactic dehydrogenase (LDH) increased; (4) the activities of both cathepsin and dipeptidase increased in the hyperplastic epidermis and slightly decreased in the papilloma and tumor tissue; (5) the activity of ATPase showed no significant change; and (6) the amount of total -SH groups remained almost constant. However, in the hyperplastic epidermis, the content of protein-bound--SH group increased, while the nonprotein-bound -SH group decreased. In papilloma and the tumor tissue, the content of nonprotein-bound -SH group increased, while the protein-bound -SH group showed no significant change from the normal epidermis.

4. The epidermal GDH activity started to decrease at an early stage of carcinogenesis, e.g., 24 hours after a single application of methylcholanthrene, when no hyperplasia had occurred on the skin of mice. Yet no significant change was observed for the LDH activity.

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5. Application of anthracene, a noncarcinogen, had no effect on the activities of the epidermal glutamic and lactic dehydrogenases.

6. The possible significance of these findings in the carcinogenesis of skin was briefly discussed in connection with the morphological changes induced by methylcholanthrene.

Morphological observations were carried out by the Department of Pathology, Institute of Experimental Medicine.

This paper was received for publication on 15 March 1962.

Authors' Affiliation: All of Department of Biochemistry, Institute of Experimental Medicine, Chinese Academy of Medical Sciences, Peiping.

LIU Ch'eng-pin (0491/2110/2430)
HU Ping-sheng (5170/3521/8508)
Wu Hui (0702/5057)
LIANG Chih-ch'uan (2733/2784/2938)

"Studies on the Analysis of Purine and Pyrimidine Bases of Nucleic Acid: II. A Spectrophotometric Method for the Analysis of the Purine and Pyrimidine Bases in RNA"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 3, Sep 62, pp 173-180

Text of English Abstract: A method based upon the differences in ultra-violet absorption of the purine and pyrimidine bases at different pH is developed for the analysis of these components in purified ribonucleic acid. In a solution containing adenine, guanine, cytosine, and uracil, optical densities are measured at four different wave lengths both at pH 1 and pH 13, and the amount of each base can be calculated by making use of the proper optical density differences. This method is simpler in procedure in comparison with other methods. Its reproducibility is satisfactory and the recovery falls within the range of 94-106%.

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(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao,
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After degradation with HClO_4 , the RNA hydrolysate is diluted with distilled water to a concentration of 2.0 N with respect to HClO_4 and is then centrifuged. Two samples of definite volume of supernatant are taken, and after addition of standard acid or base to make the solution 0.10 N with respect to either acid or base, optical densities are measured at 249, 262, 274, and 290 $\text{m}\mu$ for acid solutions and 256, 258, 282, and 290 $\text{m}\mu$ for basic solutions. A total content of 60-160 $\mu\text{g}/5.0 \text{ ml}$ of the bases is suitable for optical density measurement. The amount of each of the purine and pyrimidine bases is then calculated by the following equations:

$$\begin{aligned} \text{U} &= 0.194 \cdot \Delta D_{290_{13}} - 290_1 \cdot V \\ \text{A} &= 0.108 \cdot \Delta D_{262_1} - 282_{13} \cdot V -- 0.221 \cdot \text{U} \\ \text{G} &= 0.198 \cdot \Delta D_{249_1} - 258_{13} \cdot V -- 0.542 \cdot \text{U} \\ \text{C} &= 0.127 \cdot \Delta D_{274_1} - 256_{13} \cdot V -- 0.133 \cdot \text{G} \end{aligned}$$

A, G, C, and U represent the micromole of the bases, V, being the total volume (in ml) of the solution.

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For RNA samples degraded by one N HCl, the content of cytidylic acid (or cytosine) can be calculated by the following equation:

$$\text{C} = 0.149 \cdot \Delta D_{290_1} - 290_{13} \cdot V$$

In systems where not all four bases are present, this method can be used for the identification of the principal bases and the determination of their approximate contents.

This paper was received for publication on 2 April 1962.

Authors' Affiliation: All of Department of Biochemistry, Institute of Experimental Medicine, Chinese Academy of Medical Sciences, Peiping.

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LI Tsai-p'ing (2621/6528/1627)
KAN Jen-pao (3927/0086/1405)

"The Interfering Action of Salts in the Quantitative Determination of Dioxynucleic Acid by the Diphenylamine Reaction"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao, (Acta Biochimica et Biophysica Sinica), Vol 2, No 3, Sep 62, pp 182-192

Excerpts of English Abstract: The diphenylamine reaction, first explored by Dische in 1930, is still most frequently used for the estimation of DNA, based on the latter's sugar component. Various interfering substances have since been reported, most of which are naturally occurring contaminants, such as sugars, polysaccharides, and certain proteins. During the course of our work, serious interferences have been noted with various salts, frequently present in DNA solutions. According to the shape of the curves relating concentration to interference and the changes in the absorption spectra, the substances investigated may be divided into three groups.

1. The halides, with the exception of the fluorides, are in general very potent interfering substances.

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2. Salts other than halides.

3. Strong acids such as HClO_4 and H_2SO_4 , in concentration above one N, also interfere.

The interference of the common salts so far investigated, with the exception of that of the halides, can be eliminated quantitatively by increasing the H_2SO_4 concentration of the diphenylamine reagent up to 4.3 ml per 100 ml of glacial HAc. The absorption spectrum then resumes the normal shape. With such a measure, the reaction suffers no loss of specificity, nor any change in the stability of the color.

The authors express thanks to CHANG Yu-tuan (1728/0645/4551) and WANG Te-pao (3769/1795/1405) for their valuable opinions.

This paper was received for publication on 4 April 1962. The main contents of this paper were reported at the 1961 annual conference of the Shanghai Biochemistry Society.

Authors' Affiliation: Both of Institute of Biochemistry, Chinese Academy of Sciences, Shanghai.

C-O-N-F-I-D-E-N-T-I-A-L

SUN Yu-k'un (1327/3768/3824)
TSOU Ch'eng-lu (6760/2110/7627)

"Studies on Papain: III. Histidine and Tryptophane Residues As Essential Groups"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao, (Acta Biochimica et Biophysica Sinica), Vol 2, No 3, Sep 62, pp 194-201

Text of English Abstract: 1. Photooxidation of papain led to loss in activity and destruction of histidine and tryptophane residues. All these reactions were found to be first order, and the rate constant for the loss in activity equalled exactly the sum of the rate constants for the destruction of histidine and tryptophane residues.

2. The reaction of papain at pH 5.0 with N-bromosuccinimide has also been studied. Under such conditions, the reagent selectively oxidized the tryptophane residues of papain without significant cleavage of the peptide bonds. The decrease in activity corresponded exactly to the destruction of tryptophane residues.

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3. The above results seem to show that one histidine and one tryptophane residues are essential for the activity of papain.

The authors express thanks to WANG I-ju (3769/0308/5423) of the Biology Department, Hopeh University, for participating in some of the experimental work; to TSUNG Ju-shih (1350/3067/1395) of the Institute of Materia Medica, Chinese Academy of Sciences, for supplying N-bromosuccinimide; to NIU Ching-i (6873/4842/5030) for his valuable opinions; and to LI Li-mo (2621/7787/7210) for his assistance.

This paper was received for publication on 6 April 1962.

Authors' Affiliation: Both of Institute of Biochemistry, Chinese Academy of Sciences, Shanghai.

C-O-N-F-I-D-E-N-T-I-A-L

TSOU Ch'eng-lu (6760/2110/7627)

"Relation Between Modification of Functional Groups of Proteins and Their Biological Activity: I. A Graphical Method for the Determination of the Number and Type of Essential Groups"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao, (Acta Biochimica et Biophysica Sinica), Vol 2, No 3, Sep 62, pp 203-216

Text of English Abstract: Although the effect of the modification of the functional groups of proteins on their biological activity has been extensively studied, in only a few cases have the number and type of the essential groups thus involved been clearly established. The recent kinetic method of Koshland et al involves the assumption that both the decrease in activity and the modification of the functional groups are first order reactions, which, of course, is not true when the modifying agent is not present in great excess. In any case, the kinetic method is not applicable when the rate of modification is too great to be accurately measured.

In the present investigation, quantitative correlations between the fraction of activity remaining and the modification of a certain type of

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functional group have been established. From the equations thus obtained, the number of essential groups involved can be determined by graphical methods. When the modifying agent attacks several types of functional group, an examination of the quantitative relation between the activity decrease and the modification of these groups in the light of these equations can usually reveal the type(s) of the essential groups involved. The present method does not, in general, involve assumptions concerning the order of the reaction, nor does it call for measurements of the rates of decrease in activity and modification of functional groups, and, therefore, it should have a much wider general application than the kinetic method of Koshland et al.

Examples have been taken from the literature to show that, in most cases, treatment of the given data by the present method yields satisfactory results. An examination of the 20-30 cases thus treated shows that although the total number of a certain type of functional group may be rather large for a given protein, the number of groups essential for its activity does not usually exceed three.

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In the discussion, the present method has been compared with the kinetic method of Koshland and attention drawn to certain limitation of both methods.

This paper was received for publication on 6 April 1962.

Author's Affiliation: Institute of Biochemistry, Chinese Academy of Sciences, Shanghai.

SHEN Mei-ling (3088/5019/3781)
CHEN Jui-t'ing (7115/3843/1250)
HSU Pin (5171/1755)

"Studies on Antitumor Drugs: XII. Effect of Actinomycin K on the Amount of and on the Incorporation of P^{32} Into Nucleic Acids of Ehrlich Carcinoma Cells"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 3, Sep 62, pp 218-225

Text of English Abstract: Mice inoculated with Ehrlich ascites carcinoma cells were intraperitoneally injected on the 8th day with actinomycin K. The animals were killed 6 hours after injection.

At the dosage of 400 μ g/kg body weight, the amounts of acid-soluble P, inorganic P, fat-soluble P, nucleoprotein-nitrogen, and DNA on the basis of the dry weight or of the number of carcinoma cells remained unaffected, but the amount of RNA decreased (not at the therapeutic dose of 50 μ g/kg).

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Starting from the 3d day after inoculation, actinomycin K was given daily at the dosage of 50 μ g/kg for 5 consecutive days. Six hours after the last injection, the mice were killed. Both the amounts of RNA and nucleoprotein-nitrogen, on the basis of cell number, were decreased. If the dry weight was used as the basis for comparison, the amount of RNA still showed marked reduction, but that of nucleoprotein-nitrogen did not differ significantly. On the other hand, the amount of DNA per mg dry weight increased.

$\text{Na}_2\text{HP}^{32}\text{O}_4$ was injected subcutaneously at the dosage of one μ c/g body weight, 2 hours following the injection of actinomycin K. Four hours after the administration of the isotope, the specific radioactivities (cpm/ μ g P) of the acid-soluble P and the inorganic P in the carcinoma cells of the treated mice were similar to those of the controls. But the specific radioactivity of RNA decreased: at the dosage of 50 μ g/kg, the degree of inhibition was 40%; and at the dosage of 400 μ g/kg, 52%.

From these experimental data, it may be concluded that the synthesis of RNA in the carcinoma cells is more affected by actinomycin K than those of protein or DNA.

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The authors express thanks to HSU Hsi-ch'ang (1776/6932/2490) and SHIH Ch'ang-hai (2457/7022/3189) for participating in the technical work and to WANG Te-pao (3769/1795/1405) and Sun Ts'e (1327/0374) for their valuable opinions.

This paper was received for publication on 9 April 1962. This paper was introduced at the Shanghai 1961 conference on work in isotopes.

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KU T'ien-chueh (7357/1131/3635)
HUANG Hua-lou (7806/5478/2869)
LI Liang (2621/0081)

"Specific Glutamic Acid Decarboxylase Preparation from *Escherichia Coli* and Its Use in the Determination of Glutamate Transaminase in Blood and Tissues"

Peiping, Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica), Vol 2, No 3, Sep 62, pp 226-232

Text of English Abstract: The effects of the composition and pH of different culture media on the amino acid decarboxylase of five strains of *E. coli* were studied, and a solid medium consisting of beef broth, peptone (1%), and agar (2%) at pH 7.5 was selected to cultivate the bacteria for preparing L-glutamic acid decarboxylase. An acetone powder was prepared from *E. coli* grown in the solid medium at 37° C for 18-20 hours. It decarboxylated L-glutamic acid with a high specificity.

It was found that the solid medium was preferable to liquid ones in the cultivation of *E. coli* for the production of specific L-glutamic acid decarboxylase. *E. coli* grown in the liquid medium of beef-peptone or

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casein digest always produced decarboxylases of glutamic acid, glutamine, arginine, and lysine. But in the solid medium, it produced only the decarboxylases of L-glutamate and L-glutamine, and no induced decarboxylase of either arginine or lysine was formed. Besides, the activity of the glutamine decarboxylase vanished upon subsequently converting the preparation into dry acetone powder. The glutamic acid decarboxylase in the *E. coli* acetone powder so prepared was found to have an optimal pH of 5.1 and a Michaelis constant of 4.3×10^{-3} M.

A method involving the use of the glutamic decarboxylase in the form of *E. coli* acetone powder is introduced for the determination of glutamate transaminase in blood and tissues; Samples of blood sera or tissue homogenates are incubated with an excess of amino-acid and α -ketoglutarate at 37° C for a definite period of time, the L-glutamic acid produced is decarboxylated by the acetone powder, and the volume of CO₂ liberated is measured in the Warburg apparatus. The activity of the transaminase is then calculated in terms of micromoles of L-glutamic acid produced per unit amount of the analyzed sample (one ml of blood or one g of tissue) per hour of incubation at 37° C.

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(continuation of Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao,
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The authors expres thanks to CHANG Li-li (1728/7787/7787) of the
Biochemistry Teaching and Research Section, Shanghai First Medical
College, for participating in the work.

This paper was received for publication on 19 April 1962. It was read
in January 1960 at the National Biochemistry Conference in Shanghai.

Authors' Affiliation: All of Biochemistry Teaching and Research
Section, Shanghai First Medical College.

C-O-N-F-I-D-E-N-T-I-A-L

Earth Sciences

CHI Ming-hou (4764/2494/0186)

"Studies on the Chemical Composition of the Chinese Economic Brown Seaweeds: II. Seasonal Variations in the Main Chemical Components of Laminaria Japonica, Sargassum Pallidum and Sargassum Kjellmanianum From North China"

Peiping, Hai-yang yu Hu-chao (Oceanologia et Limnologia Sinica), Vol 5, No 1, Feb 63, pp 1-8

Excerpts of English Abstract: In this paper, studies were undertaken on the seasonal variations in the chemical composition of the artificially cultivated Laminaria japonica taken from Tsingtao in 1948-1959 and from Dalian (Dairen) in 1959 and of the wild Sargassum pallidum and S. Kjellmanianum collected in Tsingtao in 1954-1956 and 1957, respectively.

The author expresses thanks to CHANG Yen-hsia (1728/3601/7209), KUO Yu-ts'ai (6753/3768/1752), CHANG Ching-chih (1728/2417/5347), and LIU Wan-ch'ing (0491/5502/1987) for assisting with analyses.

(continuation of Hai-yang yu Hu-chao, Vol 5, No. 1, pp 1-8

This paper is Report No 210 of the Institute of Oceanography, Chinese Academy of Sciences.

Author's Affiliation: Institute of Oceanography, Chinese Academy of Sciences.

C-O-N-F-I-D-E-N-T-I-A-L

HSIA En-chan (1115/1869/3277)

"A Preliminary Phytogeographical Study on Chinese Species of Eucheuma"

Peiping, Hai-yang yu Hu-chao (Oceanologia et Limnologia Sinica),
Vol 5, No 1, Feb 63, pp 52-55

Text of English Abstract: The majority of this genus are distributed in the tropical seas, but a very few species may be extended to the subtropical seas. So Eucheuma is considered to be a warm water genus, and most species of this genus may be regarded as the indicators of the warm water flora.

All of the Chinese species of Eucheuma are found only in some regions of the South China Sea, such as: the Hainan Island, the Paracel Islands, and the Taiwan Island. Therefore, the regions mentioned above are of different temperature nature than that of the mainland Kwangtung coast.

Most of the Chinese species of Eucheuma are in common with those of the neighboring regions. Thus Hainan Island, Paracel Islands, and Taiwan Island should be comprised in the flora of Indo-West-Pacific, according to the distribution of Eucheuma.

(continuation of Hai-yang yu Hu-chao, Vol 5, No 1, pp 52-55)

This paper was written under the direction of CHANG Chun-fu (1728/1498/3940) of the Institute of Oceanography, Chinese Academy of Sciences, and reviewed by Prof TS'ENG CH'eng-k'uei (2582/0701/1145), deputy director of Institute of Oceanography, Chinese Academy of Sciences. CHANG Te-jui (1728/1795/3843) translated foreign names.

This paper is Report No 195 of the Institute of Oceanography, Chinese Academy of Sciences. It was read at the scientific and technical symposium on marine plants and animals held in Tsingtao in June 1962.

Author's Affiliation: Institute of Oceanography, Chinese Academy of Sciences.

C-O-N-F-I-D-E-N-T-I-A-L

LOU Tzu-k'ang (2869/1311/1660)

"An Observation on the Habit of the Natural Enemy of Oysters -- *Purpura*
Gradata Jonas"

Peiping, Hai-yang yu Hu-chao (Oceanologia et Limnologia Sinica),
Vol 5, No 1, Feb 63, pp 56-69

Excerpts of English Abstract: In China, *Purpura gradata* Jonas, a
gastropod natural enemy of oysters, is an important causative agent
of oyster mortality during the culture period. So far, the general
habit of this snail has not been investigated. The present paper gives
an account of the breeding and feeding habit of this animal. The
studies were carried out in the oyster culture beds at Pao-an, Kwangtung
Province in 1957.

This paper was written under the direction of CHANG Hsi (1728/3886),
deputy director of Institute of Oceanography, Chinese Academy of Sciences,
and reviewed by CH'I Chung-yen (7871/6945/1750), LIU Jui-yu (0491/3843/
3768), and WU Pao-ling (0702/1405/6875). TS'UI K'o-to (1508/0668/6995),
HO Chin-chin (0149/6855/6651), and LI P'ei-lan (2621/0160/5695) of the
Pao-an (1405/1344) oyster beds in Kwangtung Province and HO Li-hsuan

(continuation of Hai-yang yu Hu-chao, Vol 5, No 1, pp 56-69)

(0149/7787/3872) participated in the experiment.

This paper is Report No 211 of the Institute of Oceanography, Chinese
Academy of Sciences.

Author's Affiliation: Institute of Oceanography, Chinese Academy of
Sciences.

C-O-N-F-I-D-E-N-T-I-A-L

Chemistry

CHANG Yu-chih (1728/4245/0037)

HUANG Hui-chu (7806/1979/3796)

CHANG Jen-pin (1728/0088/2430)

"An Improved Rapid Method for the Determination of Carbon and Hydrogen in Organic Compounds"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No. 2, Apr 62, pp 75-78

Text of English Abstract: A rapid method for the determination of carbon and hydrogen in organic compounds is described, in which Korbl's catalytic method was modified by combining it with Korshun's pyrolysis procedure. Some 20 determinations have been carried out with errors less than 0.3 percent. It takes 20-25 minutes for one determination.

This paper was received for publication on 8 April 1960.

Authors' Affiliation: All of Institute of Materia Medica, Chinese Academy of Sciences.

CHU Jen-hung (2612/0117/1347)

CH'EN Jui-ch'un (7115/6904/5028)

FANG Sheng-ting (2455/5110/7844)

"The Chemical Constituents of Huang-teng, *Fibrauria tinctoria* Lour."

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 2, Apr 62, pp 89-94

Text of English Abstract: Three alkaloids and two neutral substances have been isolated from Huang-teng, *Fibrauria tinctoria* Lour., collected in Nan-ning District of Kwangsi Province. One of the alkaloids is palmatine, and the other two are unknown. They are provisionally named fibranine and fibraminine. Fibranine has the empirical formula of $C_{25}H_{29}O_7N$, containing three methoxy and two methylenedioxy groups. The following crystalline salts have been obtained: (1) hydrochloride, $C_{25}H_{29}O_7N \cdot HCl \cdot H_2O$, reddish prismatic needles, m.p. $196-198^\circ$, $[\alpha]_D^{15} + 273.3^\circ$ (C_2H_5OH , conc. = 1%); (2) hydroiodide, $C_{25}H_{29}O_7NHl$, yellowish needles, m.p. $217-218^\circ$; (3) perchlorate, $C_{25}H_{29}O_7N \cdot HClO_4$, yellowish needles, m.p. $273-274^\circ C$; (4) picrate, $C_{25}H_{29}O_7N \cdot C_6H_3O_7N_3$, reddish needles, m.p. $212-213^\circ C$; and

C-O-N-F-I-D-E-N-T-I-A-L

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 2, pp 89-94)

(5) chloraurate, $C_{25}H_{29}O_7N \cdot HAuCl_4$, greenish yellow needles, m.p. 185-186°. Upon reduction with Zn and sulfuric acid, it was converted to colorless needles, m.p. 184-186°, $[a]_D^{15} + 141.6^\circ$ ($CHCl_3$ conc. = 1%).

Fibraminine has the empirical formula of $C_{18}H_{19}O_8N$, yellowish prisms, m.p. 192-193°, $[a]_D^{15} + 28.33^\circ$ ($CHCl_3$ conc. = 1%), containing four methoxy groups.

A crystalline hydrobromide, $C_{18}H_{19}O_8N \cdot HBr$, yellowish needles, m.p. 202-203°, has been obtained.

Among the neutral substances isolated from this drug, one of them is a lactone, and the other is a sterol. The lactone is provisionally named fibralactone. It has the empirical formula $C_{27}H_{28}O_9$, m.p. 278°, $[a]_D^{15} + 36.60^\circ$ (C_2H_5OH , conc. = 1%), and its crystalline oxime, $C_{27}H_{29}O_9N$ m.p. 254-256°, has been prepared. The sterol has the composition $C_{27}H_{45}OH$, m.p. 136-137°, and $[a]_D^{15} + 24.51^\circ$

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 2, pp 89-94)

($CHCl_3$, conc. = 1%). The following crystalline derivatives have been prepared: (1) acetate, $C_{29}H_{48}O_2$, m.p. 127-128°; (2) benzoate, $C_{33}H_{50}O_2$, m. p. 139-140°; and (3) digitonide, m.p. 226-228°.

The authors express thanks to Analytical Laboratory, Institute of Organic Chemistry, for determination of the absorption spectrum; to HUANG Hui-chu (7806/1979/3796), CHANG Yu-chih (1728/4245/0037), WU Ching-hsiang (7072/0079/7449), T'AO Kuei-ying (7118/2710/5391), CHIANG Yu-t'ung (5592/3768/2717), HAN Ling-ling (7281/3781/3781), JEN Mei-li (0117/5019/5461), et al. for measurements and analysis of elements; and to T'ANG Jen-chun (0781/0086/0193), FAN Ming-chuan (5400/2494/1227), et al. for making corrections.

Ten references are given, of which seven are in Chinese, dating from 1936 to 1959.

This paper was received for publication on 17 January 1961.

Authors' Affiliation: All of Institute of Materia Medica, Chinese Academy of Sciences; CH'EN now taking refresher courses at Shanghai First Medical College.

C-O-N-F-I-D-E-N-T-I-A-L

LIANG Hsiao-t'ien (2733/2556/1131)
HUANG Liang (7806/6852)
SHAO Kuo-hsien (6730/0948/6343)
WU Yuan-liu (0702/0337/9497)

"A Preliminary Study on Yadanxidai"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 2,
Apr 62, pp 96-98

Text of English Abstract: A bitter principle from the seed kernel of *Brucea Javanica* (L.) Merr., named Yadanxidai, was shown to have the empirical formula $C_{20}H_{32}O_9$. It is a glycoside with one double bond, three methyl groups, one lactone ring, and one hindered, probably tertiary hydroxyl group. The sugar moiety is tentatively identified as glucose.

The authors express thanks to SHU Jen-hung (2612/0117/1347) and HUANG Wei-yuan (7806/4850/0997), who helped in the research, and to the micrometric analysis laboratory of the Chinese Academy of Sciences, who did the measurements and analysis of the elements.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 2, pp 96-98)

This paper was received for publication on 14 April 1961.

Authors' Affiliation: All of Institute of Materia Medica, Chinese Academy of Medical Sciences.

C-O-N-F-I-D-E-N-T-I-A-L

LIANG Shu-ch'uan (2733/2885/2938)
HUNG Shui-chieh (3163/3055/4105)

"On the Separation and Determination of Scandium and Thorium
II. Quinaldinic Acid as a Reagent"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 2,
Apr 62, pp 100-106

Excerpts of English Abstract: Quinaldinic acid has been employed in the determinations of cadmium, copper, iron, uranium, zinc, palladium, thorium, and zirconium. Erametsa, as well as Majumdar, reported that thorium can be separated from rare earth metals. As the properties of scandium differ somewhat from those of lanthanons, we attempt to use the said reagent in the determination of scandium.

Based on the findings reported above, a procedure has been devised for the separation of thorium and scandium and their determinations.

The authors express thanks to LI I-yu (2621/0044/7183) who helped in the work.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 2, pp 100-106)

This paper was received for publication on 5 September 1961.

Authors' Affiliation: Both of Institute of Chemistry, Chinese Academy of Sciences.

C-O-N-F-I-D-E-N-T-I-A-L

WENG Tsun-yao (5040/1415/1031)
WANG Ch'ung-yen (3769/1504/6056)
WANG Ting (3769/7844)

"Synthesis of Several Ethyl Nitro-Methyl (or Alkoxy)-Indole-2-Carboxylates and Their Corresponding Amino Compounds"

Peiping, Hua-hsueh Hsueh-pao, (Acta Chimica Sinica), Vol 28, No 2, Apr 62, pp 108-113.

Text of English Abstract: A series of ethyl nitro-methyl-(or alkoxy)-indole-2-carboxylates (VI) and their corresponding amino compounds (II) was prepared.

Nitroanilines (III) were converted to their diazonium salts. The diazonium salts condensed with ethyl alkylacetoacetate in presence of potassium hydroxide to give the nitro-phenylhydrazones of ethyl-ketoesters (IV). Compounds (IV) were then cyclized with the aid of polyphosphoric acid to substituted nitro indole-2-carboxylates (V), and the latter were subsequently reduced to the final products. (II).

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 2, pp 108-113)

By hydroxyethylation of (IIb) and (IIc) in dilute acetic acid with ethylene oxide, the corresponding bis-(hydroxyethyl)-amino compounds (VIa and VIc) were obtained.

Besides, decarboxylation of nitro-indole-2-carboxylic acids (XIIa and XIIb) by modified Parmeter's method yielded nitroindoles (VIIa and VIIb), which were then subjected to catalytic hydrogenation to give the corresponding amino-indoles (IXa and IXb).

The authors express thanks to Prof KAO I-sheng (7559/1837/3932), under whose leadership and corrections this paper was done; to SHU Han-yu (5289/3352/7183), for his participation in work; and to the members of the Analytical Laboratory, for their help in the measurements.

This paper was received for publication on 13 September 1961.

Authors' Affiliation: All of Institute of Materia Medica, Chinese Academy of Sciences; WANG Ch'ung-yen, also of Teaching and Research Section, Shanghai First Medical College; WANG Ting, also of Institute of Materia Medica, Tientsin Municipal Department of Public Health.

C-O-N-F-I-D-E-N-T-I-A-L

KO Huai-ch'eng (5514/2037/6134)
CHIANG Shang-hsin (5592/1424/0207)
TING Wei-kung (0002/4850/0501)
WANG Hui-chu (3769/1920/1337)

"Some Derivatives of p-Substituted Thio Benzoyl-Thio-Glycolic Acids"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 2,
Apr 62, pp 114-117

Text of English Abstract: p-Substituted thio benzoyl-thio-glycolic acids were prepared by the action of carbon disulphide on the p-substituted phenyl magnesium bromides, then followed by treatment of the resulted thio acids with monochloro-acetic acid.

The p-substituted thio benzoyl-thio-glycolic acids reacted with amino group-containing substances in sodium hydroxide solution to give the following derivatives: p-methoxy thio-benzhydrazide, p-methyl-thio-benzhydrazide, N²-phenyl-p-methyl-thio-benzhydrazide, and p-methyl-thio-benzoyl semicarbazide.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 2, pp 114-117)

When p-methyl thio benzoyl-thio-glycolic acid was treated with thiosemicarbazide in an alkaline solution, the product is the heterocyclic compound 2-amino-t-(p-methylphenyl)-1,3,4,-thiadiazole. The same thiadiazole was also prepared by treating p-methyl thio benzoyl semicarbazide with acetyl chloride at room temperature.

The authors express thanks to Organic Micrometric Analytical Laboratory, Institute of Materia Medica, Chinese Academy of Sciences, for measurements and analysis.

This paper was received for publication on 13 October 1961.

Authors: Affiliation: All of Shanghai Second Medical College.

C-O-N-F-I-D-E-N-T-I-A-L

CHANG Chien-min (4545/0256/3046)
SHIH Ch'ing-ho (2457/1987/0735)
CHANG Chi-hsien (1728/4949/0341)
HU Hui-jung (5170/1920/1369)
PAI Ming-chang (4101/2494/1757)

"The Evaluation of Diffusion Coefficients of Complex Ions From
Polarographic Data"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 2,
Apr 62, pp 118-121

Text of English Abstract: A general treatment has been provided for
the evaluation of the diffusion coefficients of complex ions from
polarographic data.

As an illustration of the proposed method of treatment, the diffusion
coefficients of the complex ions Tl^+ , $TlAc$ and $TlAc_2^-$, have been
evaluated to be $D_{Tl^+} = 1.22 \times 10^{-5}$, $D_{TlAc} = 1.21 \times 10^{-5}$ and
 $D_{TlAc_2^-} = 0.46 \times 10^{-5} \text{ cm}^2/\text{sec}$ ($\mu = 3$, $NaClO_4$, $25^\circ C$).

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 2, pp 118-121)

This paper was received for publication on 5 December 1961.

Authors' Affiliations: CHANG, SHIH, CHANG, and HU of Inner
Mongolia Medical College, PAI of Inner Mongolia Agricultural College.

C-O-N-F-I-D-E-N-T-I-A-L

HUANG Wei-yuan (7806/4850/0997)
CH'EN Wen-k'an (7115/2429/0170)
CHOU Yun-li (0719/7301/7787)
CHU Jen-hung (2612/0117/1347)

"The Saponin of Chinese Drug Pai-tou-wung, Anemone Chinensis Bunge-II.
Preliminary Report on the Composition of Anemosapogenin"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 3,
Jun 62, pp 126-130

Test of English Abstract: The title compound was shown to be acidic in nature and to possess a molecular formula of $C_{30}H_{48}O_4$, with two secondary hydroxyl groups, one hindered carboxyl group, and one nonhydrogenable double bond per molecular formula. Preliminary evidences indicated that it is possibly a pentacyclic triterpenic compound.

The authors express thanks to the Institute of Organic Chemistry and Institute Materia Medica, Chinese Academy of Sciences, for their measurements and analysis; to the same institutes for their infrared absorption spectrum.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 126-130)

This paper was received for publication on 17 January 1961.

Authors' Affiliations: HUANG and CH'EN of the Institute of Organic Chemistry, Chinese Academy of Sciences; CHOU and CHU of Institute of Materia Medica, Chinese Academy of Sciences; CH'EN also of Chemistry Department, Amoy University.

C-O-N-F-I-D-E-N-T-I-A-L

LIANG Shu-ch'uan (2733/2885/2938)
HUNG Shui-chieh (3163/3055/4105)

"On the Separation and Determination of Scandium and Thorium - III.
Tetrachlorophthalic Acid As a Reagent"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 3,
Jun 62, pp 137-146

Excerpts of English Abstract: Tetrachlorophthalic acid has been used as a precipitant for the determination of thorium and zirconium. These two metals precipitate at rather high acidities. Recently, the solubility products of thorium, lanthanum, praseodymium, and neodymium tetrachlorophthalates have been reported. It is interesting to note that Crookes already prepared scandium and its separation from thorium.

From the constancy in weight of both scandium and thorium tetrachlorophthalates in the temperature interval 80-150°C, it may be concluded that both precipitates can be dried and weighed as such, instead of ignition to the corresponding oxides.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 137-146)

Based upon the findings reported above, a procedure has been devised for the separation of thorium and scandium and their determinations. The results of some synthetic mixtures analyzed with the procedure are listed in Table 6*. The weight ratios of scandium oxide to thorium oxide varied from 1:2.5 to 1:9.8 have been tested, and the absolute errors lie with + 0.1 to + 0.3mg of scandium oxide and 0.0 to +0.7 mg of thorium oxide. The essential steps of the procedure are as follows. Precipitate thorium twice as tetrachlorophthalate at pH 1.0-1.1 and treat the precipitate according to Gordon et al. The filtrates and washings are brought to pH 3.0 and treated with the precipitant again. Digest for two hours on a water bath with occasional stirring. Cool, filter with a retentive paper. Wash and treat the scandium precipitate further as the thorium precipitate.

This paper was received for publication on 12 September 1961.

Authors' Affiliations: Both of Institute of Chemistry, Chinese Academy of Science.

C-O-N-F-I-D-E-N-T-I-A-L

P'ANG Shu-wei (1690/0647/5633)
LIANG Shu-ch'uan (2733/2885/2938)

"On the Separation of Lanthanides, Scandium and Thorium by Means of Paper Chromatography"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 3, June 62, pp 148-153

Excerpts of English Abstract: Two solvent mixtures, namely, tetrahydroxylane-nitric acid (sp.gr.1.42)-water (85:10:5v/v) and methyl acetate-nitric acid (sp.gr.1.42)-water (85:5:10,v/v), were suggested by Burstall et al. for the separation of lanthanides, scandium, and thorium. With the latter mixture, the thorium formed a diffuse spot. It has been tried in this laboratory to remedy the said drawback by varying the composition of the solvent systems. The Schleicher and Schurr 2045a paper was found to give better defined spots than the 2040a paper. The paper strips used were 1.5, 2.0, and 2.5 cm wide and 29 cm long. Throughout this work, the ascending technique was adopted. Saturated 90% alcoholic solution of alizarin was used to detect the elements studied. The composition of eluents (No 1 to 4) and the R_f values of zirconium, lanthanides, scandium, and thorium, when present singly or admixed, are given in Table 1 (cf. Figure 1, chromatograms No 1-4).

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 148-153)

when present singly or admixed, are given in Table 1 (cf. Figure 1, chromatograms No 1-4). With eluent No 3, a well-defined thorium spot could be obtained. Increasing acidity of the eluting system does not affect the R_f value of zirconium, but affects those of lanthanides and scandium slightly and increases that of thorium greatly.

Instead of tetrahydroxylane, we used tetrahydrofuran as eluent. The composition of eluents and the R_f values of zirconium, lanthanides, titanium, vanadium, and thorium, when present singly or admixed, are also given.

The limiting proportions of thorium and scandium to rare earth elements were found to be 1:1,000 and 1:10,000 respectively.

The relation of the length of rare earths spots and their respective amounts added has been found to be linear for 250-5,000 mg of rare earths. The linear relation fails for amounts less than 250 mg (cf. Figure 2).

The authors express thanks to CH'EN Ch'ang-i (3088/7022/1355) and CHU Chung-fen (2612/0112/5358) for their participation in part of the experiments.

C-O-N-F-I-D-E-N-T-I-A-L

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 148-153)

This paper was received for publication on 1 January 1961.

Authors' Affiliation: Both of Institute of Chemistry, Chinese Academy of Sciences.

LI Shu-wen (2621/6615/2429)
KAO I-sheng (7559/1837/3932)

"A New Synthesis of 4-Deoxypyridoxine"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 3, Jun 62, pp 155-159

Text of English Abstract: 4-Deoxypyridoxine (I) is an effective antagonist of pyridoxine and also a biochemical reagent. It possesses antitumor effect in pyridoxine-deficient animals. In this investigation, a new route for the synthesis of I has been described. The starting material is o-aminoacetophenone (II), which in turn is obtained from o-nitroethylbenzene, a by-product in the production of certain drugs. II condenses with bromoacetone in dilute alcohol in the presence of potassium hydroxide to give 2,4-dimethyl-3-hydroxyquinoline (III). The latter is ethylated with ethyl iodide to afford 2,4-dimethyl-3-ethoxyquinoline hydrochloride (IV), which is then converted to 2,4-dimethyl-3-ethoxypyridine-5,6-dicarboxylic acid (VII) via two routes: (1) IV is oxidized directly with potassium permanganate in aqueous potassium carbonate solution, and (2) IV is converted to a nitro derivative (V), then catalytically hydrogenated to an amino

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(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 155-159)

compound and finally oxidized to VII by potassium permanganate. VII is decarboxylated and then esterified with diazomethane to give the corresponding methyl ester (IX). Upon reduction with lithium aluminium hydride, the ester is converted to 2,4-dimethyl-3-ethoxy-5-hydroxymethylpyridine hydrochloride (X), which, upon treating with dilute hydrochloric acid in a sealed tube at 200-205°, yields the desired product (I).

The authors express thanks to the members of the analytical laboratory who did measurements and analysis.

This paper was received for publication on 22 November 1961.

Authors' Affiliation: Both of Institute of Materia Medica, Chinese Academy of Sciences.

LI Shu-wen (2621/6615/2429)

KAO I-sheng (7559/1837/3932)

"Synthesis of 2-Methyl-3-Hydroxymethyl-5-Nitrophenol"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 3, June 62, pp 160-165

Text of English Abstract: In the present investigation, 2-methyl-3-hydroxymethyl-5-nitrophenol (V), which may be regarded as a ring analogue of dcoxypyridoxine, was synthesized for the purpose of testing its antagonistic action against pyridoxine activity and inhibiting action on the growth of tumors. The starting material was 2-methyl-t-nitrobenzyl chloride (VI). It was nitrated to give 2-methyl-3,5-dinitrobenzyl chloride (VII), which on acetylation was converted to 2-methyl-3,5-dinitrobenzyl acetate (VIII). The latter was reduced with stannous chloride in a mixed solvent of alcohol and acetic acid to yield a 2-methyl-3-amino-5-nitrobenzyl acetate (X), which was then diazotized and hydrolysed to give the desired product (V). To establish the position of the amino group, compound X was subjected to deamination and then converted to 2-methyl-5-nitrobenzyl alcohol (XI). The latter gave no depression

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(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 160-165)

of melting point when admixed with an authentic sample prepared from VI. An attempt to convert the methyl group of V into an aldehyde group of oxidating XII with chromic acid resulted in the oxidation of the methylene instead of the methyl group of XII.

By condensing compound VII with p-nitroso-dimethylaniline, a Schiff base (XV) was obtained. The crude product was hydrolysed with dilute hydrochloric acid at room temperature to form 2-acetoxymethyl-4,6-dinitrobenzaldehyde (XVI). When the hydrolysis was carried out at boiling temperature, 2-hydroxymethyl-4,6-dinitrobenzaldehyde was obtained. Compound XVI was converted to 2-acetoxymethyl-4-nitro-6-aminobenzaldehyde by reducing with titanium trichloride.

Compound V possessed no effect toward Sarcoma 180 in mice and no antagonistic action against pyridoxal activity.

The authors express thanks to members of the analytical laboratory who did the work on measurements and analysis; to CH'EN Li-chun (3088/7787/0689), who did the microbiology research work; and to CH'EN I-yao (3088/1942/6008), who participated in part of the technical work.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 160-165)

This paper was received for publication on 24 November 1961.

Authors' Affiliation: Both of Institute of Materia Medica, Chinese Academy of Sciences.

C-O-N-F-I-D-E-N-T-I-A-L

LI Chun (2621/6874)
CHANG Li-ho (1728/4409/0735)
TUNG Chen-huan (5516/2182/3883)
WANG Hsu (3769/1645)

"Chemistry of 1, 2, 4-54izanes -- I Alkylation Reaction of
III-Mercapto-V-Hydroxy-1, 2, 4-Triazine Derivatives"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 3,
Jun 62, pp 167-172

Text of English Abstract: 3-Mercapto-5-hydroxyl-1,2,4-5riazine and
3-mercapto-5-hydroxy-6-methyl-1,2,4-triazine were alkylated in sodium
hydroxide solution with methyl iodide, ethyl iodide, or benzyl
chloride to give the corresponding 3-methylmercapto-, 3-ethylmercapto-,
or 3-benzylmercapto- derivatives. The structures of these compounds
were proved by hydrolysis with 10 percent monochloroacetic acid to the
corresponding 3,5-dihydroxy derivatives. 3-Methyl-mercapto-5-
hydroxy-1,2,4-triazine and 3-benzylmercapto-5-hydroxy-6-methyl-1, 2,
4-triazine can be synthesized directly and in better yields from
S-alkylisothiosemicarbazide and the appropriate keto acids.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 167-172)

This paper was received for publication on 26 December 1961.

Authors' Affiliation: All of Department of Pharmaceutics, Peking
Medical College; TUNG now at Hopeh Medical College.

C-O-N-F-I-D-E-N-T-I-A-L

JEN Yun-feng (0117/7189/1496)
KAO I-sheng (7559/1837/3932)

"Tumor Chemotherapy - VII. Synthesis of p-, m- and o-[BIS-(2-Chloroethyl)-Aminomethyl], Phenylalanine Dihydrochloride"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 3, Jun 62, pp 173-179

Text of English Abstract: In the present investigation of the synthesis of p-[bis-(2-chloroethyl)aminomethyl]-phenyl-alanine, dihydrochloride (IIIa, designated at AT-290) has been described. As can be seen from the structure, it is derived from the nitrogen mustard HN_2 (IV R H) by substituting one hydrogen atom of the methyl group with the p-phenylalanine moiety. Since the para position of the benzene ring is of importance in a number of metabolic functions of phenylalanine, the meta- and ortho-isomer of IIIa, namely, m-[bis-(2-chloroethyl)amino-methyl]-phenylalanine dihydrochloride (IIIb, AT-582) and o-[bis-(2-chloroethyl)aminomethyl]-phenylalanine dihydrochloride (IIIc, AT-581), were also synthesized.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 173-179)

IIIa, IIIb, and IIIc were prepared by a six-step synthesis as shown in the Chinese text. The starting material is xylol bromide (V), which is prepared through Wohl-Ziegler reaction by employing N-bromosuccinimide. Compound V condenses with diethyl formamidomalonate in the presence of sodium alcoholate in absolute alcohol to give diethyl methylbenzyl formamidomalonate (VI). The latter is readily converted to diethyl bromomethylbenzyl formamidomalonate (VII) also by employing NBS in the presence of a small amount of benzoyl peroxide in dry carbon tetrachloride. Compound VII is then treated with diethanolamine in absolute alcohol to afford diethyl bis-(2-hydroxyethyl) aminomethylbenzyl formamidomalonate (VIII). VIII is then chlorinated by treating with 30 percent excess of purified thionyl chloride in dichloromethane or chloroform solution, and the chlorinated product in solution is passed through a column of alumina to give diethyl bis-(2-chloroethyl) aminomethylbenzyl formamidomalonate (IX). Finally, the desired products (IIIa, IIIb and IIIc) are obtained by hydrolysing IX with concentrated hydrochloric acid.

Pharmacologic studies showed that compounds IIIa, IIIb, and IIIc (designated, respectively, as AT-290, AT-582, and AT-581) possessed marked antitumor activity against several experimental tumors.

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(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 173-179)

Part of this paper was read at the Nationwide Oncology Conference which was held in Tientsin in January 1959. This paper was in K'o-hsueh T'ung-pao No 11, 1961, page 43. This article appeared in Hua-hsueh Hsueh-pao Volume 26, No 6, 1960, page 140.

This paper was received for publication on 19 January 1962.

Authors' Affiliation: Both of Institute of Materia Medica, Chinese Academy of Sciences.

CHANG Te-ho (1728/1795/7901)
CH'IN Wen-mao (4440/2429/2021)
CH'IEH Jen-yuan (6929/0086/0337)

"Infrared Spectroscopic Studies on the Cis-Trans Isomerization of the Polyester From Maleic Anhydride-Ethylene Glycol"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 3, Jun 62, pp 181-186.

Text of English Abstract: The characteristic infrared absorption bands for the cis- and trans-forms of the polyester from maleic anhydride-ethylene glycol have been identified by comparison with the absorption bands of the corresponding model compounds, i.e., diethyl maleate and diethyl fumarate: Cis-form--825, 1410, 3052 cm^{-1} ; trans-form -- 780, 1371, 3072 cm^{-1} . The ratio of the optical densities of the 825 and 780 cm^{-1} bands has been chosen for the determination of the ratio of cis- and trans-forms present in the polyester. Increased temperature and duration of polyesterification increased the trans-content of the polyester obtained. The cis-trans isomerization reaction has been shown to be a first-order reaction with an activation energy of 19 kcal/mole. The large increase of viscosities of reaction mixture during polyesteri-

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(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, pp 181-186)

fication of maleic anhydride and ethylene glycol is mainly due to the increase of trans-content of the polyester formed.

This paper was received for publication on 9 January 1961.

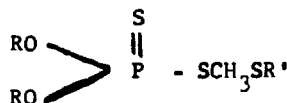
Authors' Affiliation: All of Institute of Chemistry, Chinese Academy of Sciences.

YANG Shih-hsien (2799/4258/0341)
CH'EN T'ien-ch'ih (7115/1131/3069)
LI Cheng-ming (2621/2973/0682)
LI Yu-kuei (2621/3022/2710)
TUNG Hsi-yang (5516/1585/2799)
KAO Shao-i (7559/4801/0308)
TUNG Sung-ch'i (5516/2646/3823)

"Researches on Organophosphorus Insecticides. II. O,O-Dialkyl S-Alkyl (Substituted Alkyl) Thio Methyl Phosphorodithioate"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 3, Jun 62, pp 187-190

Text of English Abstract: The present communication deals with the synthesis of ten new compounds represented by the general formula:



some physical constants of these compounds have been recorded.

C-O-N-F-I-D-E-N-T-I-A-L

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 3, 187-190)

The preliminary biological screening test showed that both the systemic action to some sucking insects species and contact action against fourth instar larva of *Culex pipiens* are comparatively low.

This paper was received for publication on 19 January 1962.

Authors; Affiliation: All of Department of Chemistry, Nan-k'ai University.

CH'EN T'ien-ch'ih (7115/1131/3069)
CH'EN Ch'i-chieh (7115/0366/0267)

"Researches on Organophosphorus Insecticides IV. Synthesis of
Analogues of Potasan"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 3,
June 62, pp 191-193

Text of English Abstract: The present communication deals with the preparation of potasan and four of its analogues. The preliminary biological screening test shows that compounds II and III exhibit fairly high insecticidal activity against cotton aphid.

This paper was received for publication on 19 January 1962.

Authors' Affiliation: Both of Department of Chemistry, Nan-k'ai University

C-O-N-F-I-D-E-N-T-I-A-L

CHU Jen-hung (2612/0117/1347)

HO Lin-hsing (0149/2651/5281)

CH'EN Yen (7115/1166+3601)

"The Alkaloids of the Chinese Drug, Yen-hu-so, *Corydalis Ambigua*,
Chem. et Sch."

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 4,
Aug 62, pp 195-199

Text of English Abstract: Besides the five known alkaloids (*Corydalis* A, B, C, L, and M) already reported by Dr T. Q. Chou, from the tubers of Chinese *Corydalis ambigua*, Chem. et Sch. (Yen-hu-so.), two more unidentified alkaloids, *Corydalis* Z and *Corydalis* Y, have now been isolated.

Corydalis X was obtained in prismatic needles with the empirical formula $C_{19}H_{17}O_4N$, m.p. 200° . Its hydrochloride melts at 238° . *Corydalis* Y has the empirical formula $C_{21}H_{29}O_7N$, melting at 229° . The original molecular formula of *Corydalis* L, $C_{19}H_{21}O_4N$ is revised to $C_{20}H_{23}O_4N$.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 195-199)

according to the analyses of the following crystalline salts:

(1) hydrobromide $C_{20}H_{23}O_4N \cdot HBr$, m.p. 223° ; (2) hydroaurichloride $C_{20}H_{23}O_4N \cdot HAuCl_4$, m.p. 127° ; (3) the sulfate of the acetyl derivative, $C_{20}H_{22}O_4N(CH_3CO) \cdot H_2SO_4$, m.p. 209° ; and (4) methiodide, $C_{20}H_{23}O_4N \cdot CH_3I$, m.p. 235° (decomp.).

The authors thank CHAO Ch'eng-ku (6392/2110/0858), Director of the Institute of Materia Medica, Chinese Academy of Sciences, for supplying the authors with *corydalis ambigua*.

This paper was received for publication on 4 July 1960.

Authors' Affiliation: All of Institute of Materia Medica, Chinese Academy of Sciences: HO is presently taking refresher courses at the Nanking College of Pharmacy.

C-O-N-F-I-D-E-N-T-I-A-L

LIU Yu-ch'eng (0491/2589/2052)

"Studies of Free Radical Reactions -- The Reaction of Grignard Reagents With 2-Bromooctane in the Presence of Cobaltous Bromide"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 4, Aug 62, pp 200-203

Text of English Abstract: The reaction of three different Grignard reagents with 2-bromooctane in the presence of small amounts of cobaltous bromide has been studied. Under the reaction conditions, the 2-octyl radical derived from the organic bromide largely (44-58%) (26-35%) dimerized. The gaseous products of the reaction have been analyzed. The results were in accord with the free radical chain mechanism of these reactions.

It was found that the extent of the octene formation in the disproportionation of 2-octyl radicals varied somewhat with the different Grignard reagents used in these experiments. This suggests the possibility of mixed disproportionation between different alkyl radicals.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 200-203)

This paper was received for publication on 29 May 1961.

Author's Affiliation: Department of Chemistry, Lanchow University.

C-O-N-F-I-D-E-N-T-I-A-L

HUANG Wei-yuan (7806/4850/0997)
HSU Chin-wen (1776/5930/2429)

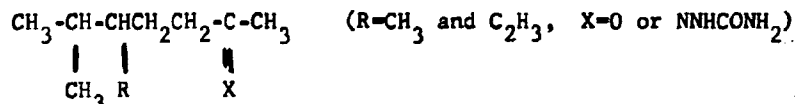
"The Absolute Configuration at C₂₄ of Phytosterols"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 4, Aug 62, pp 204-211

Text of English Abstract: The absolute configuration at C₂₄ of phytosterols was established by chemical method, namely: (+)-limonene with known absolute configuration was degraded through a series of steps to S (-)-5-ethyl-6-methylheptanone-2 and S (-)-5,6 dimethylheptanone-2, which were identical to the compounds obtained from the side chain oxidative degradation of y-siosterol and ergosterol respectively. Thus, the 24 B configuration of the above-mentioned sterols was established.

These results confirmed the 24 B configuration of ergosterol established by molecular rotation method. However, the 24 B configuration for y-siosterol contradicts the conclusion which was deduced by previous workers on the basis of Marker's empirical rule. In other words, the homologous series

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 204-211)



seems to constitute an exception to Marker's empirical rule.

This paper was received for publication on 28 September 1961; and is a part of the thesis of Hsu Chin-wen (1776/6930/2429).

Authors' Affiliation: Both of Institute of Organic Chemistry, Chinese Academy of Sciences.

C-O-N-F-I-D-E-N-T-I-A-L

CHAO Shu-wei (6392/2885/4885)
KAO I-sheng (7559/1837/3932)

"Tumor Chemotherapy--XIV. Synthesis of Compounds Related to Actinomycins-Derivatives of 2-Amino-Phenoxazone-(3)"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 4, Aug 62, pp 212-230

Text of English Abstract: The actinomycins, particularly actinomycin-C, -D, and -K, are effective in inhibiting the growth of some experimental animal, as well as human tumors, in extremely small doses in comparison with other known antitumor drugs. Since the chemical structures of these antitumorous antibiotics possess the same chromophore grouping but differ in the polypeptido-lactone-ring moiety with respect to the kinds and number of amino-acids and the sequence of their arrangement, it is suspected that the antitumor action of these compounds may arise from the chromophore grouping in common, whereas the peptido moiety functions as the carrier of the active group. In this investigation, therefore, 19 compounds derived from 2-amino-phenoxazone-(3) (II) (see Table 7 and the reaction scheme) have been prepared for the purpose of studying the relation between chemical

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 212-230)

structure and antitumor action and also of searching for the new type of synthetic antitumor compounds. To obtain the products, a 6-step synthesis starting from 2-nitro-3-hydroxy-4-substituted benzoic acids (V) was carried out, the sequence of the reactions being sketched in the Chinese text.

The authors suggested a modified method of oxidizing the amino-phenols (XIIa, XIIc, XIIId and XIIi) to the corresponding 2-amino-phenoxazones-(3) derivatives (XXIIa, XXIIc, XXIIId, and XXIIIi). The oxidation was carried out by passing air through a neutral alcoholic solution of XII in the presence of a catalyst such as Pd/C or Raney nickel under reflux or at room temperature.

The preliminary pharmacological examination showed that sarcoma 180 in mice is susceptible to certain synthesized compounds (XIXa, XXIIId).

The authors thank HSI Hsu-pin (4762/5171/1755) and CHOU Chin-hsu (0719/6855/3563) for the pharmaceutical work; SHE Tung-hua (4357/2767/5478), JEN Mei-li (0117/5019/5461), KAO Ti-liang (7559/4756/5328), T'AO Kuei-ying (7118/2710/5391), et al. for their measurements and analysis; and WANG -ying (3769/811legible/3467), MENG Ch'u-yuan (1322/0443/3104), et al. for their participation in technical work.

C-O-N-F-I-D-E-N-T-I-A-L

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 212-230)

This paper was received for publication on 28 December; it is part of a research paper by CHAO for the Institute of Materia Medica, Chinese Academy of Sciences.

Authors; Affiliation: Both of Institute of Materia Medica, Chinese Academy of Sciences.

CHOU CH'i-t'ing (0719/0796/7200)
CHI Ju-yun (1518/3067/6663)

"Serotonin Analogues--I. The Synthesis of Some Indole and Benzofuran Derivatives Carrying a Dialkylaminomethyl Side Chain"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 4, Aug 62, pp 236-242

Text of English Abstract: A number of indole and benzofuran derivatives carrying a dialkylaminomethyl side chain at the 2-position have been prepared as serotonin analogues. It is hoped that these compounds might have serotonin-like or anti-serotonin activities.

2-Indole carboxylic acid, 5-methoxyindole-2-carboxylic acid, and coumarilic acid were converted into the corresponding acyl chlorides, which, on condensation with various secondary amines such as diethyl amine, di-n-butyl amine, pyrrolidine, piperidine, and morpholine, gave the corresponding amides. Attempts to prepare 5-methoxycoumarilyl chloride by a similar process were not successful. The acid was then converted into the corresponding acyl azide, which gave the N, N-disubstituted 5-methoxycoumarilamides on interaction with the secondary amines. Reduction of these amides by means of lithium aluminum hydride

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(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 236-242)

gave the expected amines (III-VI).

Methyl 5-nitrocumarilate was reduced with potassium borohydride-lithium chloride, giving 5-nitrobenzofuran-2-carbinol, which was in turn treated with thionyl chloride. The chloro derivative formed was then condensed with the secondary amines to form the amines (VII).

This paper was received for publication on 15 January 1962.

Authors' Affiliation: Both of Institute of Materia Medica, Chinese Academy of Sciences.

FANG Sheng-ting (2455/5110/7844)
LI Liang-ch'uan (2621/5328/3123)
NIU Ching-i (6873/4842/5030)
TS'ENG Kuang-fang (2482/1684/2455)

"Chemical Studies on Cucurbita Moschata Duch.--I. The Isolation and Structural Studies of Cucurbitine"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 4, Aug 62, pp 244-250

Text of English Abstract: A new amino acid has been isolated from seeds of Cucurbita moschata Duch. The compound, having physical and chemical properties different from those of known amino acids, is provisionally named cucurbitine. Pharmacological examinations revealed that this compound was active against Schistosomiasis japonica.

The empirical formula of cucurbitine was determined to be $C_{55}H_{102}N_2$. The following crystalline salts have been prepared: the hydrochloride, m.p. 278° (decomp.), $[\alpha]_D^{25} = -15^\circ$ (c, 1%, in water); the

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(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 244-250)

perchlorate, m.p. 275° (decomp.), $[\alpha]_D^{20.5} = -13.08^\circ$ (c, 10.4%, in water), the dibenzoyl derivative, m.p. 207-208° (decomp.), $[\alpha]_D^{24.5} = -1.63^\circ$ (c, 4.83% in methanol); and the bis-DNP derivative, m.p. 230-232° (decomp.).

Examination of functional groups demonstrated that the compound had a primary amino, a secondary amino, and a carboxyl group. The existence of such groups was also confirmed by determination of its infrared spectra. Its partial formula may thus be represented as $C_4H_6(NH)(NH_2)-COOH$.

The ultraviolet absorption spectra of bis-DNP-cucurbitine showed more resemblance to those of DNP-proline and DNP-hydroxyproline. The new compound was believed to be amino-carboxylpyrrolidine.

Oxidation degradation of cucurbitine by means of potassium permanganate gave B-alanine and glycine. It seemed that only 4-amino-3-carboxylpyrrolidine and 3-amino-3-carboxylpyrrolidine could give such degradation products. Among the two possible isomeric pyrrolidine amino acids, the latter was shown to be identical with (-)-3-cucurbitine.

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 244-250)

This paper was received for publication on 17 February 1962.

Authors' Affiliation: All of Institute of Materia Medica, Chinese Academy of Sciences; NIU also associated with Institute of Biochemistry, Chinese Academy of Sciences.

C-O-N-F-I-D-E-N-T-I-A-L

SUN Ts'un-chi (1327/1317/3444)
LU Shun-hsing (7120/7311/5281)
CHAO Shu-wei (6392/2885/4885)
CHI Ju-yun (1518/3067/6663)

"Chemical Studies on Cucurbita Moschata Duch.--II. A Synthesis of Cucurbitine"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 4, Aug 62, pp 252-258

Text of English Abstract: Cucurbitine, the active principle of Cucurbita moschata, which inhibited the growth of immature Schistosoma japonicum, was shown to be either 4-amino-3-carboxylpyrrolidine or 3-amino-3-carboxylpyrrolidine. Attempts have been made in the present work to synthesize these two compounds in order to find out which one is identical with the natural product.

1,3-Dicarbethoxy-4-pyrrolidone was converted into the corresponding oxime, which was hydrogenated and subsequently hydrolysed, giving 4-amino-3-carboxylpyrrolidine. (I)-1-Carbethoxy-3-pyrrolidone was treated with ammonium chloride and potassium cyanide and then hydrolysed with

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 252-258)

hydrobromic acid, forming (+)-3-amino-3-carboxylpyrrolidine (II). Since II was more likely to be identical with the natural product cucurbitine, it was resolved through the (+)-camphorate, and the laevoisomer was obtained. Several derivatives of the laevo-compound were prepared and compared with the corresponding derivatives of cucurbitine. It was concluded that cucurbitine was (-)-3-amino-3-carboxylpyrrolidine. The dextro-compound, which was also isolated, was found to be inactive against Schistosoma.

The authors express thanks to Prof KAO I-sheng (7559/1837/3932) for his concern and to SHIH Chu (1358/6175) for his help in working in the analysis.

This paper was received for publication on 17 February 1962.

Authors' Affiliation: All of Institute of Materia Medica, Chinese Academy of Sciences.

C-O-N-F-I-D-E-N-T-I-A-L

YANG Yu-sheng (2799/5940/3932)

"Titanium and Lanthanum Ion Exchange and Isolation"

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 4, Aug 62, pp 259-261

Text of Chinese Abstract: This paper reports on the use of ion exchange and isolation in titanium and lanthanum. Titanium and lanthanum, from a sulfuric acid solution of hydrogen peroxide, are absorbed into domestically produced positive ion exchange resin rods, and then the titanium is washed in oxalic acid, and, furthermore, uses precipitation or titration with an experimental compound of copper and titanium under the existence of hydrogen peroxide and oxalic acid. Lanthanum was precipitated through the general method of a hydrochloric wash. These methods used a titanium and lanthanum mixture from a disassociation and titration of 1,500:1 to 1:10, and thus obtained a result that was satisfactory.

The author expresses thanks to CHU Chung-fen (2612/0112/5358) for his enthusiastic help; to NI Che-ming (0242/0772/2494) and

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 259-261)

HUNG Shui-chieh (3163/3055/4105) for their concern and attention; and to Prof LIANG Shu-ch'uan (2733/2885/2938) who made valuable suggestions and corrections.

This paper was received for publication on 15 January 1961.

Author's Affiliation: Institute of Chemistry, Chinese Academy of Sciences.

C-O-N-F-I-D-E-N-T-I-A-L

YANG Cheng-hsiu (2799/2973/0208)

CHANG Hsin (4545/6580)

"Synthesis of S^{35} -Labeled Compounds--I. 2,3-Dimercaptosuccinic Acid- S_2^{35} "

Peiping, Hua-hsueh Hsueh-pao (Acta Chimica Sinica), Vol 28, No 4, Aug 62, pp 263-265

Text of English Abstract: 2,3-Dimercaptosuccinic acid- S_2^{35} has been synthesized as follows: sodium sulphide- S^{35} (I) was oxidized with iodine to give sulphur- S^{35} (II). The latter was converted into phosphorous pentasulphide- S_2^{35} (III) by the action of red phosphorous. Interaction of III and acetic acid gave thiolacetic acid- S^{35} (IV). 2,3-Bis-acetylthiosuccinic acid- S_2^{35} (V) was obtained by the addition of compound IV to acetylenedicarboxylic acid. Upon hydrolysis of V, the desired 2,3-dimercaptosuccinic acid- S_2^{35} (VI) was obtained. This

(continuation of Hua-hsueh Hsueh-pao, Vol 28, No 4, pp 263-265)

method has been found to be satisfactory for the synthesis with the advantages of convenience and safety in handling.

The authors express thanks to KAO I-sheng (7559/1837/3932) for his sympathy and guidance.

This paper was received for publication on 2 February 1962.

Authors' Affiliation: Both of Institute of Materia Medica, Chinese Academy of Sciences.

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ORGANIZATIONS AND CONFERENCES

1. Prominent Scientists Attend Fluid Mechanics Conference

Physicist CHOU P'ei-yuan (0719/1014/3293), Aerodynamicist KUO Yung-huai (6753/3057/2037), and Structural Mechanics Specialist CH'IEH Ling-hsi (6929/0109/1585) attended the First Fluid Mechanics Conference in Shanghai convened recently by the Chinese Society of Mechanics. Sixty-five papers covering such fields as hydraulics, hydrodynamics, viscous fluid mechanics, aerodynamics, and multiphase infiltration theory were submitted. CHOU P'ei-yuan read a paper entitled "Uniformly Isotropic Turbulence Under High-Reynolds Numbers."

In the past few years, China had been deficient in the fields of hydrodynamics and multiphase infiltration. At this conference, however, thirty some papers in these two fields were present, and many of them had direct application to production. Of the more than 100 participants at the conference, three fifths were young and middle-age researchers in fluid mechanics, who have been trained since the liberation. Assistant researchers KUO Shang-p'ing (6753/1424/1627) and LIU Tz'u-ch'un (0491/1964/5028) of the Lan-chou Institute of Geology, Chinese Academy of Sciences, and others read 11 papers related to the area of fluid mechanics statistics on exploiting heterogenous oil fields. The ten or more young researchers of the institute's

(continuation of Jen-min Jih-pao, 15 Nov 63, p 2)

Subterranean Fluid Mechanics Laboratory submitted some new views on multiphase infiltration theory which were based on the actual conditions and special features of China's petroleum fields.

The application of the results of this research can correctly control conditions and laws governing subterranean flow of petroleum and assist in raising the exploitation rate of oil as witnessed by such application in the past year or so. (Peiping, Jen-min Jih-pao, 15 Nov 63, p 2)

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2. Chinese Scientist Reports at Soviet Semiconductor Conference

CH'EN K'e-ming of the Institute of Physics, Academy of Sciences USSR, was coauthor with V. A. Chuenkov of the report "On the Process of a Breakdown in Time," one of 96 reports given at the Fifth All-Union Conference on the Theory of Semiconductors, held in Baku on 29 October to 3 November 1962. The conference was convoked by the Commission on Semiconductors, Academy of Sciences USSR, jointly with the Academy of Sciences, Azerbaidjan SSR, and Azerbaidjan State University imeni S. M. Kirov. More than 250 individuals, representing 23 cities in the USSR, participated in the conference. (Moscow, Akademiya Nauk SSR, Uspekhi Fizicheskikh Nauk, Vol 81, No 3, Nov 63, p 565)

3. Rural Electrification Conference

The Chinese Electrical Engineering Society and the Peiping Municipal Electrical Engineering Society recently sponsored the annual scientific and technical conference on rural electrification. It was attended by representatives from electrical engineering design, construction, production and scientific research units who analyzed the economic advantages of rural electrification. (Peiping, Pei-ching Jih-pao, 5 Nov 63, p 2)

C-O-N-F-I-D-E-N-T-I-A-L

4. Shanghai Municipal Society of Chinese Traditional Medicine

To celebrate the tenth anniversary of the establishment of the Shanghai Municipal Society of Chinese Traditional Medicine, the Chinese Society of Traditional Internal Medicine, the Gynecology Society, and the Pediatrics Society combined to hold the 1962 Annual Conference. A total of 125 papers were received at the conference. (Shanghai, Hsin-min Wan-pao, 21 Apr 63, p 1)

5. Nanking Institute of Geography Begins Lake Research

To advance the exploitation of lakes as a natural research to serve agricultural production, the personnel of the Nanking Institute of Geography at the present time are making a comprehensive research of the important lakes in Kiangsu Province and are inquiring into agricultural production and the possibility of utilizing and transforming various natural features of the lakes. Moreover, the personnel of the institute are accumulating systematic scientific data.

The research personnel, on the basis of joint research on the natural economic conditions of the lake, are extensively investigating the water conservation resources of the lakes within the province, the resources of fish, the resources of plants and animals, and the resources of virgin land. The research personnel, at a lake experimental station, are promoting research of hydrothermal balance and have already obtained several advanced research results.

The research personnel have carried out involved investigatory research at Shih-chiu Lake and Tan-yang Lake. The major purpose of this investigatory research was to inquire into the causes of the bogging up of the lake basins. (Shanghai, Wen-hui-pao, 12 Mar 63, p 1)

C-O-N-F-I-D-E-N-T-I-A-L

6. Two Geographical Reports Given

CHOU Li-san (0719/4539/0005), deputy director of the Nanking Institute of Geography, Chinese Academy of Sciences, and KUO Ching-hui (6753/2417/6540), deputy director of the Institute of Geography, Chinese Academy of Sciences, were recently invited to make a scientific report at the Heilungkiang Provincial Geography Society meeting.

CHOU's report was "Several Problems Relating to Agricultural Divisions." KUO's paper was entitled "Types of Chinese Rivers." (Shanghai, Wen-hui-pao, 12 Mar 63, p 1)

7. Chinese Horticulture Society Holds Annual Meeting

The Chinese Horticulture Society recently held its 1963 annual meeting in Canton. One hundred and one persons from Peiping, Shanghai, Hangchow, Ch'ang-sha, Tsinghai, and Tibet participated in the meeting.

A total of 322 technical papers were received at this meeting. The quantity and technical value of these papers were much higher than what has been received in the past.

This annual meeting promoted discussions on the four specialties of fruit trees, tea leaves, vegetables, and flowers.

The specialized group on tea leaves discussed the biology, physiology, biochemistry, product research, cultivation, tea processing, and other technical questions on tea leaves.

The special group on fruit trees investigated the cultivation of lichee, orange, pineapple, apple, lungnan, and other fruit trees, product type, and other questions.

C-O-N-F-I-D-E-N-T-I-A-L

(continuation of Chung-kuo Hsin-wen, 9 Dec 63, pp 6-7)

The specialized group on vegetables discussed vegetable supply, seed cultivation and seed selection, investigation of the types of commodity, and other questions.

The group on flowers discussed the application of old traditions for modern purposes in flower cultivation and park arrangement. (Canton, Chung-kuo Hsin-wen, 9 Dec 63, pp 6-7)

C-O-N-F-I-D-E-N-T-I-A-L

MANPOWER AND EDUCATION

1. Shanghai University of Science and Technology Celebrates Its Fourth Anniversary

On the afternoon of 18 May 1963, the Shanghai University of Science and Technology held a general meeting to celebrate the fourth anniversary of its establishment.

SHU Wen (5289/2429), Vice-Chairman of the Shanghai Municipal Science and Technology Committee, went to the meeting to offer his congratulations. Also attending the meeting to offer congratulations were CHOU Chih-hung (0719/1107/1347), vice-president of the Shanghai Chiao-tung University; T'AN Chia-chen (6151/1367/2823), vice-president of Fu-tan University; SU Yuan-fu (5685/0337/1788), vice-president of the East China Chemical Engineering College; and personnel from the various research institutes of the Chinese Academy of Sciences in Shanghai.

In 1958, the Shanghai University of Science and Technology admitted its first group of students, and on 19 May 1959 the university was officially established. This year the university will have its first graduating class. Over 70 percent of the total number of students at this university are from worker or peasant families. In 1960, this

(continuation of Chieh-fang Jih-pao, 19 May 63, p 2)

university admitted more than 300 advanced workers from Shanghai.

In the university library, there are more than 130,000 volumes, 41 laboratories, and one attached plant. The number of courses offered totals 124, with more than 400 experiments presented. Last year, the university issued 226 scientific and technological reports. (Shanghai, Chieh-fang Jih-pao, 19 May 63, p 2)

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2. Research at the Institute of Elemental Organic Chemistry,
Nan-k'ai University

The Institute of Elemental Organic Chemistry was established at Nan-k'ai University, Tientsin, in October 1962. This institute, altogether, has 48 research persons of whom the majority are young people. Twenty-three of these persons graduated last year from colleges. Two prominent chemists, Prof YANG Shih-hsien (2799/4258/0341), head of Nan-k'ai University, and Prof KAO Chen-heng (7559/2182/5899), deputy director of the Department of Chemistry, are concurrently the head and deputy head of the Chemistry Department.

The Institute of Elemental Organic Chemistry, Nan-k'ai University, has obtained successful research results. One of these is "Nan-k'ai No 1," a weed-killing agent which was experimented with in Hunan, cotton fields in Peiping and other places, maize fields, and soybean fields, and its effectiveness surpassed 90 percent. Not only did the professors of the Chemistry Department of Nan-k'ai University and the professors of the Institute of Elemental Organic Chemistry, Nan-k'ai University, work closely together in the basic research on "Nan-k'ai No 1," but they have also promoted a search into many realms of new science in the Institute of Elemental Organic

(continuation of Chung-kuo Hsin-wen, 12 Dec 63, p 8)

Chemistry. In the last year, the new institute has altogether finished more than ten research projects, among which were weed killing agents, insecticides, disinfectants, plant stimuli, and many new agricultural chemicals.

The institute has recently test-produced a new type of intermediate and has utilized this type of intermediate. The Institute has also test-produced seven new types of organic phosphorus insecticides. (Canton, Chung-kuo Hsin-wen, 12 Dec 63, p 8)

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3. Peking Petroleum College

In the last 10 years, approximately 6,000 students have graduated from Peking Petroleum College, which was established in 1953. Up to the present, approximately 3,000 petroleum geological exploration technicians and crude oil production technicians have been trained. These technical personnel, together with old workers and old engineers and technicians, organized into exploration teams, well-drilling teams, and oil-extraction teams which have discovered new oil and natural gas fields. (Peiping, Pei-ching Jih-pao, 4 Nov 63, p 2)

4. Noted Chinese Pediatrician

In February 1963, CHANG Wei-hsun (1728/3555/6676), professor of pediatrics and deputy head of the Sino-Soviet Friendship Hospital, Peiping, was the Chinese delegate to the Tenth Medical Congress held in Cuba. At this congress, CHANG read a paper on adenoviral pneumonia in children. This paper clearly stated the causes and clinical symptoms in the development of adenoviral pneumonia. This paper has been of great value in the treatment and cure of this disease.

CHANG Wei-hsun was a student who studied in the US; and after he graduated in 1949, in addition to doing medical scientific research, he was a leader in government and a teacher of medicine. CHANG has had worthy clinical experience. At the present time, he is preparing to promote research work on early diagnosis of pneumonia in newborn children and the mortality rate in newborn children. (Canton, Chung-kuo Hsin-wen, 7 Dec 63, pp 7-8)

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5. Prominent Biologist Honored

On 26 October 1963, a reception was held in honor of CH'IEN Ch'ung-shu (6929/1504/3412), a prominent biologist who has devoted the past 50 years to biological research and educational work. CH'IEN is a member of the Department of Biology Committee, Chinese Academy of Sciences, and director of the Institute of Botany, Chinese Academy of Sciences.

KUO Mo-jo, president of the academy and other prominent scientists in Peiping attended the reception. WU Cheng-i (0702/1767/6965), director of the K'un-ming Branch, Institute of Botany, Chinese Academy of Sciences, spoke of CH'IEN's contribution to science and education. (Canton, Chung-kuo Hsin-wen, 27 Oct 63, p 6)

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NEW PUBLICATIONS AND BOOK REVIEWS

1. New University Journal on Chemistry

Issue No 1, 1963, of Nan-ching Ta-hsueh Hsueh-pao: Hua-hsueh Pan
(Journal of Nanking University: Chemistry) contains the following articles:

"A Theory of the Use of Silicic Acid Polymers," by TAI An-pang
(2071/1344/6721);

"Studies on Silicic Acid and Its Salts: VI. Polymerization of
Silicic Acid and Variations in Acidity of Solutions," by TAI An-pang and
CH'EN Jung-san (7115/2837/0005);

"Studies on Silicic Acid and Its Salts: VII. A Rather Complete
N Curve," by TAI An-pang, CH'EN Jung-san, and CHU T'un (2612/1470);

"X-ray Determination of Silicon Dioxide in Crystal State in Grain
Hull Ashes," by CH'EN Jung-san and CHU Wen-fan (2621/2429/5400);

"The Stability Constant of Triethylene Diamine Copper Complex," by
LO Ch'in-hui (5012/0530/1979), YANG Ping-hsiang (2799/3521/4382), and
P'ENG Kuo-hsin (1756/0948/2450);

(continued)

"Research on Electromagnetism and Heat Stability of Disulfur
Substituted Oxamide Copper Chelate Polymer Complex," by CHUANG Jui-fang
(5445/3843/5302);

"Square Wave Polarogram Research: III. Catalytic Electric Current
Equation," by CHANG Tsu-hsun (1728/4436/6064) and KAO Hung (7559/7703);

"Research on Oscillopolarography of Linear Deflections: I.
Catalytic Current Theory," by KAO Hung, CHANG Tsun-hsun, and CHANG Wen-pin
(1728/2429/1755);

"Separation of Trace Amounts of Copper and Catalytic Determination:
I. Applied to Tungsten and Molybdenum," by CH'IU Chia-kuei (5941/1367/
1145), CHANG Shu-ch'eng (1728/2885/2052), YANG Nien-jung (2799/1819/2837),
and LI Ho-fang (2621/5440/5364);

"Modification in the Spectrophotometry of Rhodamine B Determination
of Gold," by KAN Chih-hsing (3927/4249/5887) and CHAO Chu-ting (6392/
1337/1353); and

"Rapid Determination of Semimicro Amounts of Phosphorus in Organic
Phosphide Compounds," by WANG Yuan-shen (3769/3293/6500) and HO Chi-yuan
(0149/4764/0337). (Peiping, Jen-min Jih-pao, 13 Nov 63, p 6)

C-O-N-F-I-D-E-N-T-I-A-L

2. New Book on Astronomy

The book Jih-ti Kuan-hsi (Solar-Earth Relationship), by YANG Chien-ch'u (2799/7003/0443), was recently published by the Peiping, K'o-hsueh P'u-chi Ch'u-pan-she (Scientific Extension Publishing House). This book, containing approximately 40,000 words, is briefly commented upon on the last page of source. (Peiping, Tien-wen Ai-hao-che (Astronomy Enthusiasts), No 8, 8 Aug 63, p 11) (CONFIDENTIAL)

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FOREIGN TRAVELS AND CONTACTS

1. Chinese Micropalaeontologist Arrives in Havana

HAO I-ch'un (6787/6095/4783), a Chinese micropalaeontologist, arrived on 17 November 1963 in Havana by plane. He is in Cuba according to provisions of the 1963 Sino-Cuban Scientific and Technological Cooperation Agreement. (Peiping, Chin-jih Hsin-wen, 18 Nov 63, p 6)

2. Chinese Doctor in Korea

On 14 November 1963, Vice-Premier of the Korean Cabinet, YI Chu-yon, received Prof CHU Chi-ming (2612/2478/2494) of the Department of Virology, Chinese Academy of Medical Sciences, who arrived in Pyongyang on 18 October 1963, under the 1963 plan for scientific exchange between the Korean and Chinese Academies of Sciences. (Peiping, Jen-min Jih-pao, 16 Nov 63, p 4)

C-O-N-F-I-D-E-N-T-I-A-L

BIOGRAPHIC INFORMATION

CHANG Ching-yueh (1728/2529/6885), Department of Biology, Peking University; author of an article, "Cell Walls of Plants," (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No. 3, 1963, pp 7-11)

CHAO K'en-t'ang (6392/5146/1016)

CHANG Hsueh-jung (1728/1331/2827)

Both of the Department of Biology, Inner Mongolia University; coauthors of an article, "Mongolian Wild Horses." (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No 3, 1963, pp 21-24)

CH'EN Kuo-hsiao (7115/0948/1321), Ming Tomb Work Station, Institute of Zoology, Chinese Academy of Sciences; author of an article, "Seasonal Changes of Floating Plants at the Ming Tomb Reservoir." (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No 3, 1963, pp 12-15)

CHU Yao-pin (2612/5069/2430); author of an article, "Structure of Water and Its Interior Movements." (Peiping, Hua-hsueh T'ung-pao [Chemistry Bulletin], No 5, May 63, pp 19-27)

HAO Shou, author of an article, "Sturm-Liouville Differential Problem for a Fourth-Order Equation With Variable Coefficients," in Russian; received for publication on 10 October 1962. (Moscow, Akademiya Nauk SSSR, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 3, No 6, Nov Dec 63, pp 1014-1030)

HO Chien (0149/0256), Harbin Provincial Teacher Refresher College; author of an article, "Several Points With Regard to the Strengthening of Foundation Knowledge and Training and Basic Skills in Middle School Biology Courses." (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No 3, 1963, pp 49-52)

HO Ti-hsin (6320/3321/2450), Kansu Bureau of Land Reclamation; author of an article, "Plants To Stabilize Sand -- Tamarisk." (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No 3, 1963, pp 18-20)

HU Chih-te (5170/0037/1795)

HSIEH Hsiu-chi (6200/4423/0796)

Coauthors of an article, "Separation of Vanadium, Molybdenum, and Tungsten by Reverse-Phase Paper Chromatography." (Peiping, Hua-hsueh T'ung-pao [Chemistry Bulletin], No 5, May 63, pp 56-57)

C-O-N-F-I-D-E-N-T-I-A-L

HUANG T'ien-ming, Moscow Higher Technical School imeni N. E. Bauman; author of the dissertation for the scientific degree of Candidate of Technical Sciences, "Precision and Dynamic Functions During Gearing," in Russian. (Moscow, Stanki i Instrument, No 12, Dec 63, p 35)

HUANG Tsung-chen (7806/1350/3914); author of an article, "Higher Animals and Their Fondness of the Soil." (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No 3, 1963, pp 27-28)

LI Ch'ang-ch'i, Kiev Polytechnic Institute; author of the dissertation for the scientific degree of Candidate of Technical Sciences, "Investigation of High-Speed Tracking of Hydraulic Duplicating Systems of Metal-Cutting Machines," in Russian. (Moscow, Stanki i Instrument, No 12, Dec 63, p 35)

LI Cho-hsin (0448/0587/8590)

WEI Hsiao-fu (7614/1321/1318)

Both of the Chekiang Provincial Academy of Agricultural Sciences; coauthors of an article, "Culture Experiments in the Laboratory With Nitrogen Fixing in Blue Aquatic Plants." (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No 3, 1963, pp 16-17)

LING Chi-tung (3249/4949/2767); author of an article, "Chemical Kinetics in Flow Systems." (Peiping, Hua-hsueh T'ung-pao [Chemistry Bulletin], No 5, May 63, pp 28-33)

LU Wei-ch'un (0712/4850/4783); author of an article, "The Concept of Isotopes and Displacement Law." (Peiping, Hua-hsueh T'ung-pao [Chemistry Bulletin], No 5, May 63, pp 35-37)

P'AN I-ts'eng (3382/4946/2582); Biology Teaching and Research Section, Lanchow Medical College; author of an article, "Methods of Staining Plant and Animal Chromosomes." (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No 3, 1963, pp 54-55)

TIEN Li-ch'ing (3944/4567/0615); author of an article, "Differential Spectrophotometry." (Peiping, Hua-hsueh T'ung-pao [Chemistry Bulletin], No 5, May 63, pp 45-51)

TSOU Wen-chung (6760/2429/1813); Biology Department, Peking University; author of an article, "Largest and Smallest Animals." (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No 3, 1963, pp 25-27)

C-O-N-F-I-D-E-N-T-I-A-L

- WANG Ch'ang-han, Moscow Institute of Radioelectronics and Mining Electro-mechanics; author of the dissertation for the scientific degree of Candidate of Technical Sciences, "Search for Efficient Structures of Chamber Floors and Investigation of Certain Developments in the Manifestation of Mining Pressure During Ore Tapping," in Russian. (Moscow, Vechernyaya Moskva, 16 Apr 63, p 4)
- WANG Hsiang-ming (3076/0686/2494), Department of Biology, Wuhan University; author of an article, "A Discussion on the Question of the Acceptance and Criticism of the Genetic Theory." (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No 3, 1963, pp 34-41)
- WANG Hung-en (3769/7703/1869), Lo-yang Municipal Second Middle School; author of an article, "Educated Comprehension of 'Mendel-Morgan on Research of Heredity and Variation.'" (Peiping, Sheng-wu-hsueh T'ung-pao, [Biology Bulletin], No 3, 1963, pp 42-48)
- WANG Li-hui (3769/4539/1920); author of an article, "Diffusion Kinetics of Free Radicals in Radiation Chemistry." (Peiping, Hua-hsueh T'ung-pao [Chemistry Bulletin], No 5, May 63, pp 12-18)
- WU Ch'ing-yun (0702/1987/0061); author of an article, "Problems Derived From Mathematical Formulations of Solubility Products." (Peiping, Hua-hsueh T'ung-pao [Chemistry Bulletin], No 5, May 63, p 59)
- WU Kuan-li (0702/6034/7787); author of an article, "Organo-silicon Derivatives of Ferrocene." (Peiping, Hua-hsueh T'ung-pao [Chemistry Bulletin], No 5, May 63, pp 37-45)
- WU Sung-lin (0702/2646/2651); author of an article "Synthesis of Potassium Ethyl and n-Butyl Xanthone Labeled With S³⁵." (Peiping, Hua-hsueh T'ung-pao [Chemistry Bulletin], No 5, May 63, p 58)
- YANG Tse-ch'ao, Moscow Higher Technical School imeni N. E. Bauman; author of the dissertation for the scientific degree of Candidate of Technical Sciences, "Investigation of Precision of Axial Dimensions and Distribution of Holes in Processing Aggregate Machine Tools," in Russian. (Moscow, Vechernyaya Moskva, 10 Jun 63, p 4)

C-O-N-F-I-D-E-N-T-I-A-L

- CHAO Tsung-p'u (6392/1350/3302), author of an article, "Tectonic Movements of Yen-shan in East China." (Peiping, Ti-chih K'o-hsueh [Scientia Geologica Sinica], No 3, Aug 63, pp 128-138) (CONFIDENTIAL)
- FANG Ta (2455/6671), author of an article, "Visual Method of Conducting Observation of the Variable Stars." (Peiping, T'ien-wen Ai-hao-che [Astronomy Enthusiasts], No 8, Aug 63, pp 12-14) (CONFIDENTIAL)
- HU Ning-sheng (5170/1380/3932), Purple Mountain Observatory, Nanking; author of an article, "Suggestion of Simple Method of Improving the Magnification of a Double Telescope." (Peiping, Tien-wen Ai-hao-che [Astronomy Enthusiasts], No 8, Aug 63, pp 10-11) (CONFIDENTIAL)
- KUO Ch'eng-chi (6753/2110/1015), author of an article, "Geochemical Succession and Evolution of the Rare Elements in Granits -- A Conception on the Ionic Differentiation of the Magna." (Peiping, Ti-chih K'o-hsueh [Scientia Geologica Sinica], No 3, Aug 63, pp 109-127) (CONFIDENTIAL)
- LI Ching (2621/4552), author of an article, "On Past and Future Stellar Classification by Spectrophometry." (Peiping, Tien-wen Ai-hao-che [Astronomy Enthusiasts], No 8, Aug 63, pp 8-9) (CONFIDENTIAL)
- LI Chien-teng (2621/7003/3397); author of an article, "Precession of the Equinoxes." (Peiping, Tien-wen Ai-hao-che [Astronomy Enthusiasts], No 8, Aug 63, pp 4-7) (CONFIDENTIAL)
- LI Hsi-lin (2621/6932/2651), author of an article, "Potassium Ferric Sulfate (Goldichite) -- First Report of This Mineral Salt in China." (Peiping, Ti-chih K'o-hsueh [Scientia Geologica Sinica], No 3, Aug 63, pp 163-168) (CONFIDENTIAL)
- PO Shu-jeu (5631/2885/0086), author of an article, "The Story on Kuo Shou-ching (6753/1343/2417) [a famous Chinese astronomer and expert in water conservancy]." (Peiping, Tien-wen Ai-hao-che [Astronomy Enthusiasts], No 8, Aug 63, pp 1-3) (CONFIDENTIAL)
- SHA Ch'ing-an (3097/1987/134-)
- LIU Hung-yun (0491/7703/0336)
- CHANG Shu-sen (1728/2885/2773)
- CH'EN Meng-o (7115/1322/5458)

Coauthors of an article, "Nan-t'o Formation of (Sinian) Tillites in the Eastern Districts of the Yangtze Gorges." (Peiping, Ti-chih K'o-hsueh [Scientia Geologica Sinica], No 3, Aug 63, pp 139-148) (CONFIDENTIAL)

C-O-N-F-I-D-E-N-T-I-A-L

TSENG Ch'ing-feng (2582/1987/0023), author of an article, "Tectonic Analysis of Fissure-Filling Form of Ore Deposits" (Peiping, Ti-chih K'o-hsueh [Scientia Geologica Sinica], No 3, Aug 63, pp 149-156). (CONFIDENTIAL)

WANG Tao-te (3769/6670/1795)

CHU Shu-chun (2612/2579/0193)

Coauthors of an article, "A Preliminary Study of the Spodumene in Binary Granites and Its Origin." (Peiping, Ti-chih K'o-hsueh [Scientia Geologica Sinica], No 3, Aug 63, pp 157-160) (CONFIDENTIAL)

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LIST OF ACTAS SINICA

The following Actas Sinica (Hsueh-pao) are being published in Peiping:

| <u>Title</u> | <u>Periodicity</u> |
|---|--------------------|
| 1. Ch'i-hsiang Hsueh-pao (Acta Meteorologica Sinica) | Quarterly |
| 2. Chieh-p'ou Hsueh-pao (Acta Anatomica Sinica) | Quarterly |
| 3. Chih-wu Hsueh-pao (Acta Botanica Sinica) | Quarterly |
| 4. Chih-wu Feng-lei Hsueh-pao (Acta Phytotaxonomica Sinica) | Quarterly |
| 5. Chih-wu Ping-li Hsueh-pao (Acta Phytopathologica Sinica) | Quarterly |
| 6. Chin-shu Hsueh-pao (Acta Metallurgica Sinica) | Quarterly |
| 7. Ch'u-mu Shou-i Hsueh-pao (Acta Veterinaria et Zootechnica Sinica) | Quarterly |
| 8. Hai-yang yu Hu-chao (Oceanologia et Limnologia Sinica) | Quarterly |
| 9. Hsin-li Hsueh-pao (Acta Psychologica Sinica) | Quarterly |
| 10. Hua-hsueh Hsueh-pao (Acta Chimica Sinica) | Bimonthly |
| 11. Ku-sheng-wu Hsueh-pao (Acta Palaeontologica Sinica) | Quarterly |
| 12. K'un-ch'ung Hsueh-pao (Acta Entomologica Sinica) | Bimonthly |
| 13. Li-hsueh Hsueh-pao (Acta Mechanica Sinica) | Quarterly |
| 14. Nung-yeh Chi-hsieh Hsueh-pao (Acta Agromechanica Sinica) | Quarterly |
| 15. Sheng-li Hsueh-pao (Acta Physiologica Sinica) | Quarterly |
| 16. Sheng-wu Hua-hsueh yu Sheng-wu Wu-li Hsueh-pao (Acta Biochimica et Biophysica Sinica) | Quarterly |
| 17. Shih-yen Sheng-wu-hsueh Hsueh-pao (Acta Biologiae Experimentalis Sinica) | Semiannual |

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|-----|---|------------|
| 18. | Shu-hsueh Hsueh-pao (Acta Mathematica Sinica) | Quarterly |
| 19. | Shui-sheng Sheng-wu-hsueh Chi-k'an (Acta Hydrobiologica Sinica) | Semiannual |
| 20. | Ti-chih Hsueh-pao (Acta Geologica Sinica) | Quarterly |
| 21. | Ti-ch'iu Wu-li Hsueh-pao (Acta Geophysica Sinica) | Semiannual |
| 22. | Ti-li Hsueh-pao (Acta Geographica Sinica) | Quarterly |
| 23. | Tien-tzu Hsueh-pao (Acta Electronica Sinica) | Quarterly |
| 24. | T'ien-wen Hsueh-pao (Acta Astronomica Sinica) | Semiannual |
| 25. | T'ien-wen Hsueh-pao Fu-k'an (Acta Astronomica Sinica Supplementum) | Semiannual |
| 26. | Ts'e-hui Hsueh-pao (Acta Geodetica et Cartographica Sinica) | Quarterly |
| 27. | T'u-jang Hsueh-pao (Acta Pedologica Sinica) | Quarterly |
| 28. | Tung-wu Hsueh-pao (Acta Zoologica Sinica) | Quarterly |
| 29. | Tzu-tung-hua Hsueh-pao (Acta Automatica Sinica) | Quarterly |
| 30. | Wei-sheng-wu Hsueh-pao (Acta Microbiologica Sinica) | Quarterly |
| 31. | Wu-li Hsueh-pao (Acta Physica Sinica) | Monthly |
| 32. | Yao-hsueh Hsueh-pao (Acta Pharmaceutica Sinica) | Monthly |
| 33. | Chi-hsieh Kung-ch'eng Hsueh-pao (Chinese Journal of Mechanical Engineering) | Quarterly |
| 34. | Chih-wu Pao-hu Hsueh-pao (Chinese Journal of Plant Protection) | Quarterly |
| 35. | Chien-chu Hsueh-pao (Journal of Architecture) | Monthly |
| 36. | Kuei-suan-yen Hsueh-pao (Chinese Journal of Silicate) | Quarterly |
| 37. | Shui-li Hsueh-pao (Chinese Journal of Hydraulic Engineering) | Bimonthly |
| 38. | T'u-mu Kung-ch'eng Hsueh-pao (Chinese Journal of Civil Engineering) | Bimonthly |

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UNCLASSIFIED
Central Intelligence Agency

7 September 2004

Ms. Roberta Schoen
Deputy Director for Operations
Defense Technical Information Center
7725 John J. Kingman Road
Suite 0944
Ft. Belvoir, VA 22060

Dear Ms. Schoen:

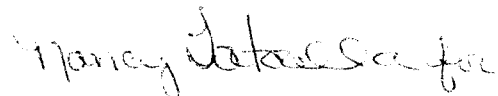
In February of this year, DTIC provided the CIA Declassification Center with a referral list of CIA documents held in the DTIC library. This referral was a follow on to the list of National Intelligence Surveys provided earlier in the year.

We have completed a declassification review of the "Non-NIS" referral list and include the results of that review as Enclosure 1. Of the 220 documents identified in our declassification database, only three are classified. These three are in the Release in Part category and may be released to the public once specified portions of the documents are removed. Sanitization instructions for these documents are included with Enclosure 1.

In addition to the documents addressed in Enclosure 1, 14 other documents were unable to be identified. DTIC then provided the CDC with hard copies of these documents in April 2004 for declassification review. The results of this review are provided as Enclosure 2.

We at CIA greatly appreciate your cooperation in this matter. Should you have any questions concerning this letter and for coordination of any further developments, please contact Donald Black of this office at (703) 613-1415.

Sincerely,



Sergio N. Alcivar
Chief, CIA Declassification Center,
Declassification Review and Referral
Branch

Enclosures:

1. Declassification Review of CIA Documents at DTIC (with sanitization instructions for 3 documents)
2. Declassification Status of CIA Documents (hard copy) Referred by DTIC (with review processing sheets for each document)

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Processing of OGA-Held CIA Documents

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| AD0343932 | 78-03117A | 213 | 1 | 18 | 5117 | Scientific Information Report Chinese Science (34) | 10/22/1963 | 89 | Approved For Release | 3/29/2004 |
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| AD0349491 | 78-03117A | 225 | 1 | 18 | 5560 | Scientific Information Report Chinese Science (46) | 4/24/1964 | 118 | Approved For Release | 3/29/2004 |
| AD0349657 | 78-03117A | 225 | 1 | 34 | 5581 | Scientific Information Report Chinese Science (47) | 5/4/1964 | 98 | Approved For Release | 3/29/2004 |
| AD0332751 | 78-03117A | 183 | 1 | 29 | 3940 | Scientific Information Report Electronics And Engineering (22) | 10/19/1962 | 68 | Approved For Release | 3/29/2004 |
| AD0333146 | 78-03117A | 186 | 1 | 20 | 4041 | Scientific Information Report Electronics And Engineering (23) | 11/23/1962 | 73 | Approved For Release | 3/29/2004 |
| AD0334103 | 78-03117A | 188 | 1 | 37 | 4136 | Scientific Information Report Electronics And Engineering (24) | 12/20/1962 | 62 | Approved For Release | 3/29/2004 |
| AD0334236 | 78-03117A | 190 | 1 | 40 | 4217 | Scientific Information Report Electronics And Engineering (25) | 1/22/1963 | 48 | Approved For Release | 3/29/2004 |
| AD0334769 | 78-03117A | 193 | 1 | 39 | 4339 | Scientific Information Report Electronics And Engineering (26) | 2/28/1963 | 68 | Approved For Release | 3/29/2004 |
| AD0335480 | 78-03117A | 196 | 1 | 17 | 4436 | Scientific Information Report Electronics And Engineering (27) | 3/21/1963 | 95 | Approved For Release | 3/29/2004 |
| AD0336306 | 78-03117A | 199 | 1 | 2 | 4538 | Scientific Information Report Electronics And Engineering (28) | 4/25/1963 | 69 | Approved For Release | 3/29/2004 |
| AD0332433 | 78-03117A | 183 | 1 | 35 | 3946 | Scientific Information Report Organization And Administration Of Soviet Science (5) | 10/22/1962 | 60 | Approved For Release | 3/29/2004 |